





Class F326

Book B 51

REMARKS UPON THE MAP.

The accompanying map, is substantially that of Prof. Tuomey, published in 1858. The additions and corrections now introduced may be briefly stated, as follows: 1st, The addition of several small patches of coal-bearing rocks in Jackson and Madison counties; 2d, The extension of Wills' Valley into Georgia; 3d, The increased territory of the Coosa coal field; 4th, Correction of the southwestern outline of the Warrior coal basin, east and southeast of Tuscaloosa; 5th, The omission of Sub-Carboniferous on the eastern edge of the Cahaba coal field—the field being cut off on that side by a *fault* which brings the Lower Silurian up to the level of the coal; 6th, The changing of the eastern limit of the Silurian of Coosa Valley, so as to include the Acadian (Ocoee Slates and Conglomerates), heretofore placed with the Metamorphic Rocks; 7th, Some slight changes in the western, southwestern, and southern limits of the Metamorphic area; 8th, Change in the width of the belt of Drift, between the Paleozoic and Cretaceous formations. As has been stated in the Geological Section, the pebbles, sand, &c., of the Drift cover the greater part of the lower half of the State south and southwest of the Paleozoic formations: for this reason this formation is not laid down upon the map, except along the belt indicated, where the beds are of exceptional thickness. But for the fact that the line of junction of the Paleozoic and Cretaceous formations, is so completely obscured by this accumulation of Drift materials, that it has not yet been accurately traced out, even this belt of Drift might be omitted in the coloring of the map. 9th, Change in the boundary between Cretaceous and Tertiary, near the Mississippi line. In the present map this boundary is some twenty miles or more, further north than it is in Tuomey's map; 10th, The Port Hudson group of the Quaternary, is shown in the lower part of the State. The other Quaternary deposits, except the belt of Drift spoken of above, are not indicated on the map, for lack of the necessary data.

Finally, on account of the small scale of the map, no attempt has been made to show the position of the various subdivisions of the geological formations, but one color is made to serve for the whole Silurian, another for the Cretaceous, and a third for the Tertiary. The map, therefore, like that of Prof. Tuomey, is intended to show, only the most important geological features of the State.

The iron ore beds, located on the map, are mostly those which supply or have supplied furnaces or forges, and while they are fairly represented, no attempt has been made to give a complete list of the localities where iron ore occurs abundantly. It is found almost everywhere along the Silurian valleys. The coal mines are fully located, or very nearly so. In this connection, surface diggings have not been noticed, and only those localities are given where coal mining is done on a large scale. Coal has been worked on a small scale in thousands of places in this State, but there are only a few mines. As regards gold and copper, only those points are indicated, where machinery, crushing stamps, etc., are used, or where extensive mining operations have been carried on, and this list may not be complete. Surface diggings not noticed.

E. A. S.

HAND BOOK OF ALABAMA:

A COMPLETE INDEX TO THE STATE;

574
708
WITH A GEOLOGICAL MAP,

—AND AN—

APPENDIX OF USEFUL TABLES.

By SAFFOLD BERNEY,

ATTORNEY AT LAW, MOBILE, ALA.

“COAL which is the source of POWER, and
IRON which is the source of STRENGTH.”—*Dr. Lyon Playfair*.

Price--Paper, \$1.50; Half-Law, \$2.00.

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TABLE OF CONTENTS.

GEOLOGICAL MAP OF ALABAMA, WITH ACCOMPANYING REMARKS. CONSTITUTION OF ALABAMA.

PART FIRST.

Origin of the name, ALABAMA—Geography; and Historical Chronology of the State; with an account of the Indians once living here	1-11
--	------

PART SECOND.

Government of Alabama; its State and County Organization; Political Divisions; and Laws relating to Elections and the Holding of Office.....	12-26
--	-------

PART THIRD.

Synopsis of the Tax Laws, and other Important Statutes of Alabama	27-43
---	-------

PART FOURTH.

The Free Public School System of Alabama; its Normal Schools; Universities and Colleges.....	44-53
--	-------

PART FIFTH.

The State Institutions of Alabama.....	54-72
--	-------

PART SIXTH.

Sketches of the Four Principal Cities of Alabama, and of Birmingham, and Cullman	73-88
--	-------

PART SEVENTH.

The Water Transportation Lines, and Projected Canals of Alabama.....	89-113
--	--------

PART EIGHTH.

The Railroads of Alabama; and the Postal, Telegraph, and Express Facilities of the State... ..	114-128
--	---------

PART NINTH.

Outline of the Geology of Alabama.....	129-196
--	---------

PART TENTH.

The Soils of Alabama.....	197-220
---------------------------	---------

TABLE OF CONTENTS.

PART ELEVENTH.

The Forests of Alabama, and their Products.....221-235

PART TWELFTH.

The Grasses and other Forage Plants of Alabama—Indigenous, Naturalized, and Cultivated.....236-247

PART THIRTEENTH.

The Agricultural Divisions, Capabilities, and Advantages of Alabama.....248-255

PART FOURTEENTH.

The Coal and Coal Mines, Iron and Iron Works of Alabama.....256-267

PART FIFTEENTH.

Cotton Manufacturing in Alabama.....268-278

PART SIXTEENTH.

Miscellaneous Information.....279-283

PART SEVENTEENTH.

The Climate of Alabama, and its Adaptation to Health and Comfort.....284-294

CONCLUSION.....295-297

APPENDIX.....298-330

INDEX.....331-338

CONSTITUTION

OF THE

STATE OF ALABAMA.*

PREAMBLE.

We, the people of the State of Alabama, in order to establish justice, insure domestic tranquility, provide for the common defense, promote the general welfare, and secure to ourselves and to our posterity, life, liberty and property, profoundly grateful to Almighty God for this inestimable right, and invoking His favor and guidance, do ordain and establish the following constitution and form of government for the State of Alabama:

ARTICLE I.

DECLARATION OF RIGHTS.

That the great, general and essential principles of liberty and free government may be recognized and established, we declare:

SECTION 1. That all men are equally free and independent; that they are endowed by their Creator with certain inalienable rights; that among these are life, liberty, and the pursuit of happiness.

SEC. 2. That all persons resident in this State, born in the United States, or naturalized, or who shall have legally declared their intention to become citizens of the United States, are hereby declared citizens of the State of Alabama, possessing equal, civil and political rights.

SEC. 3. That all political power is inherent in the people, and all free governments are founded on their authority, and instituted for their benefit; and that, therefore, they have, at all times, an inalienable and indefeasible right to change their form of government, in such manner as they may deem expedient.

SEC. 4. That no religion shall be established by law; that no preference shall be given by law to any religious sect, society, denomination, or mode of worship; that no one shall be compelled by law to attend any place of worship, nor to pay any tithes, taxes, or other rate, for building or repairing any place of worship, or for maintaining any minister or ministry; that no religious test shall be required as a qualification to any office or public trust, under this State; and that the civil rights, privileges and capacities of any citizen, shall not be in any manner affected by his religious principles.

*Became Operative December 6th, 1875.

SEC. 5. That any citizen may speak, write and publish his sentiments on all subjects, being responsible for the abuse of that liberty.

SEC. 6. That the people shall be secure in their persons, houses, papers and possessions, from unreasonable seizures or searches; and that no warrant shall issue to search any place, or to seize any person or thing without probable cause, supported by oath or affirmation.

SEC. 7. That in all criminal prosecutions, the accused has a right to be heard by himself and counsel, or either; to demand the nature and cause of the accusation; to have a copy thereof; to be confronted by the witnesses against him; to have compulsory process for obtaining witnesses in his favor; and in all prosecutions by indictment a speedy public trial by an impartial jury of the county or district in which the offense was committed; and that he shall not be compelled to give evidence against himself, nor be deprived of his life, liberty or property, but by due process of law.

SEC. 8. That no person shall be accused or arrested, or detained, except in cases ascertained by law, and according to the forms which the same has prescribed; and no person shall be punished but by virtue of a law established and promulgated prior to the offense, and legally applied.

SEC. 9. That no person shall, for any indictable offense, be proceeded against criminally, by information, except in cases arising in the militia and volunteer forces when in actual service, or by leave of the court, for misfeasance, misdemeanor, extortion and oppression in office, otherwise than is provided in this constitution; Provided, That in cases of petit larceny, assault, assault and battery, affray, unlawful assemblies, vagrancy and other misdemeanors, the General Assembly may, by law, dispense with a grand jury, and authorize such prosecutions and proceedings before justices of the peace, or such inferior courts as may be by law established.

SEC. 10. That no person shall, for the same offense, be twice put in jeopardy of life or limb.

SEC. 11. That no person shall be debarred from prosecuting or defending, before any tribunal in this State, by himself or counsel, any civil cause or proceeding to which he is a party.

SEC. 12. That the right of trial by jury shall remain inviolate.

SEC. 13. That in prosecutions for the publication of papers investigating the official conduct of officers, or men in public capacity, or when the matter published is proper for public information, the truth thereof may be given in evidence; and that in all indictments for libel, the jury shall have the right to determine the law and the facts under the direction of the court.

SEC. 14. That all courts shall be open, and that every person, for any injury done him in his lands, goods, person or reputation, shall have a remedy by due process of law; and right and justice shall be administered without sale, denial or delay.

SEC. 15. That the State of Alabama shall never be made defendant in any court of law or equity.

SEC. 16. That excessive fines shall not be imposed, nor cruel or unusual punishments inflicted.

SEC. 17. That all persons shall, before conviction, be bailable by suffi-

cient sureties, except for capital offenses when the proof is evident or the presumption great; and that excessive bail shall not, in any case, be required.

SEC. 18. That the privilege of the writ of *habeas corpus* shall not be suspended by the authorities of this State.

SEC. 19. That treason against the State shall consist only in levying war against it, or adhering to its enemies, giving them aid and comfort; and that no person shall be convicted of treason except on the testimony of two witnesses to the same overt act, or his own confession in open court.

SEC. 20. That no person shall be attainted of treason by the General Assembly; and that no conviction shall work corruption of blood or forfeiture of estate.

SEC. 21. That no person shall be imprisoned for debt.

SEC. 22. That no power of suspending laws shall be exercised, except by the General Assembly.

SEC. 23. That no *ex post facto* law, nor any law impairing the obligation of contracts, or making any irrevocable grants of special privileges or immunities, shall be passed by the General Assembly.

SEC. 24. That the exercise of the right of eminent domain shall never be abridged or so construed as to prevent the General Assembly from taking the property and franchises of incorporated companies and subjecting them to public use the same as individuals. But private property shall not be taken for or applied to public use, unless just compensation be first made therefor; nor shall private property be taken for private use, or for the use of corporations, other than municipal, without the consent of the owners; Provided, however, that the General Assembly may, by law, secure to persons or corporations the right of way over the lands of other persons or corporations, and by general laws provide for and regulate the exercise by persons and corporations of the rights herein reserved; but just compensation shall, in all cases, be first made to the owner; And provided, That the right of eminent domain shall not be so construed as to allow taxation or forced subscription for the benefit of railroads or any other kind of corporations other than municipal, or for the benefit of any individual or association.

SEC. 25. That all navigable waters shall remain forever public highways, free to the citizens of the State, and of the United States, without tax, impost or toll, and that no tax, toll, impost or wharfage shall be demanded or received from the owner of any merchandise or commodity, for the use of the shores, or any wharf erected on the shores, or in, or over the waters of any navigable stream, unless the same be expressly authorized by law.

SEC. 26. That the citizens have a right, in a peaceable manner, to assemble together for the common good, and to apply to those invested with the power of government for redress of grievances, or other purposes, by petition, address or remonstrance.

SEC. 27. That every citizen has a right to bear arms in defense of himself and the State.

SEC. 28. That no standing army shall be kept up without the consent of the General Assembly; and, in that case, no appropriation for its

support shall be made for a longer term than one year; and the military shall, in all cases, and at all times, be in strict subordination to the civil power.

SEC. 29. That no soldier shall, in time of peace, be quartered in any house, without the consent of the owner; nor in time of war, but in a manner to be prescribed by law.

SEC. 30. That no title of nobility, or hereditary distinction, privilege, honor or emolument, shall ever be granted or conferred in this State; and that no office shall be created, the appointment to which shall be for a longer time than during good behavior.

SEC. 31. That immigration shall be encouraged, emigration shall not be prohibited, and no citizen shall be exiled.

SEC. 32. That temporary absence from the State shall not cause a forfeiture of residence once obtained.

SEC. 33. That no form of slavery shall exist in this State, and there shall be no involuntary servitude, otherwise than for the punishment of crime, of which the party shall have been duly convicted.

SEC. 34. The right of suffrage shall be protected by laws regulating elections, and prohibiting, under adequate penalties, all undue influences from power, bribery, tumult, or other improper conduct.

SEC. 35. The people of this State accept as final the established fact that from the Federal Union there can be no secession of any State.

SEC. 36. Foreigners who are or may hereafter become *bona fide* residents of this State, shall enjoy the same rights in respect to the possession, enjoyment and inheritance of property, as native born citizens.

SEC. 37. That the sole object and only legitimate end of government is to protect the citizen in the enjoyment of life, liberty and property; and when the government assumes other functions it is usurpation and oppression.

SEC. 38. No educational or property qualification for suffrage or office, nor any restraint upon the same on account of race, color or previous condition of servitude, shall be made by law.

SEC. 39. That this enumeration of certain rights shall not impair or deny others retained by the people.

ARTICLE II.

STATE AND COUNTY BOUNDARIES.

SECTION 1. The boundaries of this State are established and declared to be as follows—that is to say: Beginning at the point where the 31st degree of north latitude crosses the Perdido river; thence east to the western boundary line of the State of Georgia, thence along said line to the southern boundary line of the State of Tennessee; thence west along the southern boundary line of the State of Tennessee, crossing the Tennessee river, and on to the second intersection of said river by said line; thence up said river to the mouth of Big Bear Creek; thence by a direct line to the northwest corner of Washington county in this State, as originally formed; thence southerly along the line of the State of Mississippi to the Gulf of Mexico; thence eastwardly, including all

islands within six leagues of the shore, to the Perdido river; thence up the said river to the beginning.

SEC. 2. The boundaries of the several counties of this State, as heretofore established by law, are hereby ratified and confirmed. The General Assembly may, by a vote of two-thirds of both houses thereof, arrange and designate boundaries for the several counties of this State, which boundaries shall not be altered, except by a like vote; but no new counties shall be hereafter formed of less extent than six hundred square miles, and no existing county shall be reduced to less extent than six hundred square miles, and no new county shall be formed which does not contain a sufficient number of inhabitants to entitle it to one representative, under the ratio of representation existing at the time of its formation, and leave the county or counties from which it is taken with the required number of inhabitants entitling such county or counties to separate representation.

ARTICLE III.

DISTRIBUTION OF POWERS OF GOVERNMENT.

SECTION 1. The powers of the government of the State of Alabama shall be divided into three distinct departments, each of which shall be confided to a separate body of magistracy, to-wit: Those which are legislative to one; those which are executive to another; and those which are judicial to another.

SEC. 2. No person or collection of persons, being of one of those departments, shall exercise any power properly belonging to either of the others, except in the instances hereinafter expressly directed or permitted.

ARTICLE IV.

LEGISLATIVE DEPARTMENT.

SECTION 1. The legislative power of this State shall be vested in a General Assembly, which shall consist of a Senate and House of Representatives.

SEC. 2. The style of the laws of this State shall be, "Be it enacted by the General Assembly of Alabama." Each law shall contain but one subject, which shall be clearly expressed in its title, except general appropriation bills, general revenue bills and bills adopting a code, digest or revision of statutes; and no law shall be revived, amended, or the provisions thereof extended or conferred by reference to its title only; but so much thereof as is revived, amended, extended or conferred, shall be re-enacted and published at length.

SEC. 3. Senators and Representatives shall be elected by the qualified electors on the first Monday in August, 1876, and one-half of the senators and all the representatives shall be elected every two years thereafter, unless the General Assembly shall change the time of holding elections. The terms of the office of the senators shall be four years, and that of the representatives two years, commencing on the day after the general election, except as otherwise provided in this constitution.

SEC. 4. Senators shall be at least 27 years of age, and representatives 21 years of age; they shall have been citizens and inhabitants of this State for three years, and inhabitants of their respective counties or districts one year next before their election, if such county or district shall have been so long established, but if not, then of the county or district from which the same shall have been taken; and they shall reside in their respective counties or districts during their terms of service.

SEC. 5. The General Assembly shall meet biennially at the capitol, in the senate chamber and in the hall of the house of representatives, (except in cases of destruction of the capitol, or epidemics, when the Governor may convene them at such place in the State as he may deem best)—on the day specified in this constitution, or on such other day as may be prescribed by law, and shall not remain in session longer than sixty days at the first session held under this constitution, nor longer than fifty days at any subsequent session.

SEC. 6. The pay of the members of the General Assembly shall be four dollars per day, and ten cents per mile in going to and returning from the seat of government, to be computed by the nearest usual route traveled.

SEC. 7. The General Assembly shall consist of not more than thirty-three senators, and not more than one hundred members of the house of representatives, to be apportioned among the several districts and counties as prescribed in this constitution.

SEC. 8. The Senate, at the beginning of each regular session and at such other times as may be necessary, shall elect one of its members president thereof, and the house of representatives, at the beginning of each regular session, shall elect one of its members as speaker; and the president of the senate and the speaker of the house of representatives shall hold their offices respectively until their successors are elected and qualified. Each house shall choose its own officers, and shall judge of the election, returns and qualifications of its members.

SEC. 9. At the general election in the year 1876, senators shall be elected in the even numbered districts, to serve for two years, and in the odd numbered districts to serve for four years, so that thereafter one-half the senators may be chosen biennially. Members of the house of representatives shall be elected at the general election every second year. The time of service of senators and representatives shall begin on the day after their election, except the terms of those elected in 1876, which shall not begin until the term of the present members shall have expired. Whenever a vacancy shall occur in either house, the Governor for the time being shall issue a writ of election to fill such vacancy for the remainder of the term.

SEC. 10. A majority of each house shall constitute a quorum to do business, but a smaller number may adjourn from day to day, and may compel the attendance of absent members in such manner and under such penalties as each house may provide.

SEC. 11. Each house shall have power to determine the rules of its proceedings, and punish its members or other persons for contempt or disorderly behavior in its presence, to enforce obedience to its process, to protect its members against violence, or offers of bribes or corrupt

solicitation, and with the concurrence of two-thirds of either house to expel a member, but not a second time for the same cause; and shall have all the powers necessary for the legislature of a free State.

SEC. 12. A member of either house expelled for corruption, shall not thereafter be eligible to either house: and punishment for contempt or disorderly behavior, shall not bar an indictment for the same offense.

SEC. 13. Each house shall keep a journal of its proceedings and cause the same to be published immediately after its adjournment, excepting such parts as in its judgment may require secrecy; and the yeas and nays of the members of either house on any question shall, at the desire of one-tenth of the members present, be entered on the journals. Any member of either house shall have liberty to dissent from or protest against any act or resolution which he may think injurious to the public or an individual, and have the reasons for his dissent entered on the journals.

SEC. 14. Members of the General Assembly shall in all cases, except treason, felony, violation of their oath of office and breach of the peace, be privileged from arrest during their attendance at the sessions of their respective houses, and in going to and returning from the same, and for any speech or debate in either house they shall not be questioned in any other place.

SEC. 15. The doors of each house shall be open, except on such occasions as in the opinion of the house may require secrecy.

SEC. 16. Neither house shall, without the consent of the other, adjourn for more than three days, nor to any other place than that in which they may be sitting.

SEC. 17. No senator or representative shall, during the term for which he shall have been elected, be appointed to any civil office of profit, under this State, which shall have been created or the emoluments of which shall have been increased during such term, except such office as may be filled by election by the people.

SEC. 18. No person hereafter convicted of embezzlement of public money, bribery, perjury, or other infamous crime, shall be eligible to the General Assembly, or capable of holding any office of trust or profit in this State.

SEC. 19. No law shall be passed except by bill, and no bill shall be so altered or amended on its passage through either house as to change its original purpose.

SEC. 20. No bill shall become a law until it shall have been referred to a committee of each house and returned therefrom.

SEC. 21. Every bill shall be read on three different days in each house—and no bill shall become a law unless on its final passage it be read at length and the vote be taken by yeas and nays, the names of the members voting for and against the same be entered on the journals, and a majority of each house be recorded thereon as voting in its favor, except as otherwise provided in this constitution.

SEC. 22. No amendment to bills by one house shall be concurred in by the other except by a vote of a majority thereof, taken by yeas and nays, and the names of those voting for and against recorded upon the journals; and reports of committees of conference shall in like manner be adopted in each house.

SEC. 23. No special or local law shall be enacted for the benefit of individuals or corporations in cases which are or can be provided for by a general law, or where the relief sought can be given by any court of this State. Nor shall the operation of any general law be suspended by the General Assembly for the benefit of any individual, corporation or association.

SEC. 24. No local or special law shall be passed on a subject which cannot be provided for by a general law, unless notice of the intention to apply therefor shall have been published in the locality where the matter or things to be affected may be situated, which notice shall be at least twenty days prior to the introduction into the General Assembly of such bill—the evidence of such notice having been given, shall be exhibited to the General Assembly before such act shall be passed; Provided, That the provisions of this constitution as to special or local laws, shall not apply to public or educational institutions of, or in this State, nor to industrial, mining, immigration or manufacturing corporations or interests, or corporations for constructing canals, or improving navigable rivers and harbors of this State.

SEC. 25. The General Assembly shall pass general laws, under which local and private interests shall be provided for and protected.

SEC. 26. The General Assembly shall have no power to authorize lotteries or gift enterprises for any purpose, and it shall pass laws to prohibit the sale of lottery or gift enterprise tickets, or tickets in any scheme in the nature of a lottery, in this State, and all acts or parts of acts heretofore passed by the General Assembly of this State, authorizing a lottery or lotteries, and all acts amendatory thereof or supplemental thereto, are hereby avoided.

SEC. 27. The presiding officer of each house shall, in the presence of the house over which he presides, sign all bills and joint resolutions passed by the General Assembly, after the titles have been publicly read immediately before signing, and the fact of signing shall be entered on the journal.

SEC. 28. The General Assembly shall prescribe by law the number, duties and compensation of the officers and employes of each house, and no payment shall be made from the State Treasury, or be in any way authorized to any person, except to an acting officer or employe, elected or appointed in pursuance of law.

SEC. 29. No bill shall be passed giving any extra compensation to any public officer, servant or employe, agent or contractor, after the services shall have been rendered, or contract made; nor shall any officer of the State bind the State to the payment of any sum of money but by authority of law.

SEC. 30. All stationery, printing, paper and fuel used in the legislative and other departments of government, shall be furnished, and the printing, binding and distribution of laws, journals, department reports, and all other printing and binding, and repairing and furnishing the halls and rooms used for the meetings of the General Assembly and its committees, shall be performed under contract, to be given to the lowest responsible bidder below a maximum price, and under such regulations as shall be prescribed by law; no member or officer of any department

of the government shall be in any way interested in such contracts, and all such contracts shall be subject to the approval of the Governor, State Auditor and State Treasurer.

SEC. 31. All bills for raising revenue shall originate in the House of Representatives, but the Senate may propose amendments as in other bills.

SEC. 32. The general appropriation bill shall embrace nothing but appropriations for the ordinary expenses of the executive, legislative and judicial departments of the State, interest on the public debt and for the public schools; all other appropriations shall be made by separate bills, each embracing but one subject.

SEC. 33. No money shall be paid out of the treasury except upon appropriations made by law, and on warrant drawn by the proper officer in pursuance thereof, and a regular statement and account of receipts and expenditures of all public moneys shall be published annually in such manner as may be by law directed.

SEC. 34. No appropriation shall be made to any charitable or educational institution not under the absolute control of the State, other than Normal schools established by law for the professional training of teachers for the public schools of the State, except by a vote of two-thirds of all the members elected to each house.

SEC. 35. No act of the General Assembly shall authorize the investment of any trust funds by executors, administrators, guardians and other trustees, in the bonds or stock, of any private corporation; and any such acts now existing are avoided, saving investments heretofore made.

SEC. 36. The power to change the venue in civil and criminal causes is vested in the courts, to be exercised in such manner as shall be provided by law.

SEC. 37. When the General Assembly shall be convened in special session, there shall be no legislation upon subjects other than those designated in the proclamation of the Governor calling such session.

SEC. 38. No State office shall be continued or created for the inspection or measuring of any merchandise, manufacture or commodity, but any county or municipality may appoint such officers, when authorized by law.

SEC. 39. No act of the General Assembly changing the seat of government of the State, shall become a law until the same shall have been submitted to the qualified electors of the State at a general election, and approved by a majority of such electors voting upon the same, and such act shall specify the proposed new location.

SEC. 40. A member of the General Assembly who shall corruptly solicit, demand or receive, or consent to receive, directly or indirectly, for himself or for another, from any company, corporation, or person, any money, office, appointment, employment, reward, thing of value or enjoyment, or of personal advantage, or promise thereof for his vote or official influence, or for withholding the same, or with an understanding, expressed or implied, that his vote or official action shall be in any way influenced thereby, or who shall solicit or demand any such money or other advantage, matter or thing aforesaid, for another, as the considera-

tion of his vote or official influence, or for withholding the same, or shall give or withhold his vote or influence in consideration of the payment or promise of such money, advantage, matter or thing to another, shall be guilty of bribery within the meaning of this constitution, and shall incur the disabilities provided thereby for such offense, and such additional punishment as is or shall be provided by law.

SEC. 41. Any person who shall, directly or indirectly, offer, give or promise any money or thing of value, testimonial, privilege or personal advantage to any executive or judicial officer, or member of the General Assembly to influence him in the performance of any of his public or official duties, shall be guilty of bribery, and be punished in such manner as shall be provided by law.

SEC. 42. The offense of corrupt solicitation of members of the General Assembly, or of public officers of this State, or of any municipal division thereof, and any occupation or practice of solicitation of such member or officers to influence their official action shall be defined by law, and shall be punished by fine and imprisonment.

SEC. 43. A member of the General Assembly who has a personal or private interest in any measure or bill, proposed or pending before the General Assembly, shall disclose the fact to the house of which he is a member, and shall not vote thereon.

SEC. 44. In all elections by the General Assembly, the members shall vote *viva voce*, and the votes shall be entered on the journals.

SEC. 45. It shall be the duty of the General Assembly to pass such laws as may be necessary and proper to decide differences by arbitrators, to be appointed by the parties who may choose that mode of adjustment.

SEC. 46. It shall be the duty of the General Assembly, at its first session after the ratification of this constitution, and within every subsequent period of ten years, to make provision by law for the revision, digesting, and promulgation of the public statutes of this State of a general nature, both civil and criminal.

SEC. 47. The General Assembly shall pass such penal laws as they may deem expedient to suppress the evil practice of dueling.

SEC. 48. It shall be the duty of the General Assembly to regulate by law the cases in which deductions shall be made from the salaries of public officers for neglect of duty in their official capacities, and the amount of such deductions.

SEC. 49. It shall be the duty of the General Assembly to require the several counties of this State to make adequate provision for the maintenance of the poor.

SEC. 50. The General Assembly shall not have power to authorize any municipal corporation to pass any laws inconsistent with the general laws of this State.

SEC. 51. In the event of annexation of any foreign territory to this State, the General Assembly shall enact laws extending to the inhabitants of the acquired territory all the rights and privileges which may be required by the terms of the acquisition, anything in this constitution to the contrary notwithstanding.

SEC. 52. The General Assembly shall not tax the property, real and personal, of the State, counties or other municipal corporations, or ceme-

teries; nor lots in incorporated cities or towns, or within one mile of any city or town, to the extent of one acre, nor lots one mile or more distant from such cities or towns, to the extent of five acres, with the buildings thereon, when the same are used exclusively for religious worship, for schools, or for purposes purely charitable; nor such property, real or personal, to an extent not exceeding twenty-five thousand dollars in value, as may be used exclusively for agricultural or horticultural associations of a public character.

SEC. 53. The General Assembly shall by law prescribe such rules and regulations as may be necessary to ascertain the value of personal and real property exempted from sale under legal process by this constitution, and to secure the same to the claimant thereof as selected.

SEC. 54. The State shall not engage in works of internal improvement, nor lend money or its credit in aid of such; nor shall the State be interested in any private or corporate enterprise, or lend money or its credit to any individual, association or corporation.

SEC. 55. The General Assembly shall have no power to authorize any county, city, town, or other subdivision of this State, to lend its credit, or to grant public money or thing of value in aid of, or to any individual, association or corporation whatsoever, or to become a stockholder in any such corporation, association or company, by issuing bonds or otherwise.

SEC. 56. There can be no law of this State impairing the obligation of contracts by destroying or impairing the remedy for their enforcement; and the General Assembly shall have no power to revive any right or remedy which may have become barred by lapse of time or by any statute of this State.

ARTICLE V.

EXECUTIVE DEPARTMENT.

SECTION 1. The executive department shall consist of a Governor, Secretary of State, State Treasurer, State Auditor, Attorney General and Superintendent of Education, and a Sheriff for each county.

SEC. 2. The supreme executive power of this State shall be vested in a Chief Magistrate, who shall be styled "The Governor of the State of Alabama."

SEC. 3. The Governor, Secretary of State, State Treasurer, State Auditor and Attorney General shall be elected by the qualified electors of this State, at the same time and places appointed for the election of members of the General Assembly.

SEC. 4. The returns of every election for Governor, Secretary of State, State Auditor, State Treasurer and Attorney General, shall be sealed up and transmitted by the returning officers to the seat of government, directed to the Speaker of the House of Representatives, who shall during the first week of the session to which said returns shall be made, open and publish them in the presence of both houses of the General Assembly in joint convention. The person having the highest number of votes for either of said offices shall be declared duly elected; but if two or more shall have an equal and the highest number of votes for the

same office, the General Assembly, by joint vote, without delay, shall choose one of said persons for said office. Contested elections for Governor, Secretary of State, State Auditor, State Treasurer and Attorney General shall be determined by both houses of the General Assembly in such manner as may be prescribed by law.

SEC. 5. The Governor, Secretary of State, State Treasurer, State Auditor and Attorney General shall hold their respective offices for the term of two years from the time of their installation in office and until their successors shall be elected and qualified.

SEC. 6. The Governor shall be at least thirty years of age when elected, and shall have been a citizen of the United States ten years and a resident citizen of this State at least seven years next before the day of his election.

SEC. 7. The Governor, Secretary of State, State Treasurer, State Auditor and Attorney General shall reside at the seat of government of this State during the time they continue in office (except in case of epidemics); and they shall receive compensation for their services, which shall be fixed by law, and which shall not be increased or diminished during the term for which they shall have been elected.

SEC. 8. The Governor shall take care that the laws be faithfully executed.

SEC. 9. The Governor may require information in writing, under oath, from the officers of the executive department on any subject relating to the duties of their respective offices; and he may at any time require information in writing, under oath, from all officers and managers of State institutions, upon any subject relating to the condition, management and expenses of their respective offices and institutions; and any such officer or manager who makes a false report shall be guilty of perjury and punished accordingly.

SEC. 10. The Governor may, by proclamation, on extraordinary occasions convene the General Assembly at the seat of government, or at a different place, if, since their last adjournment, that shall have become dangerous from an enemy or from infectious or contagious diseases; and he shall state specifically in such proclamation each matter concerning which the action of that body is deemed necessary.

SEC. 11. The Governor shall, from time to time, give to the General Assembly information of the state of the government, and recommend to their consideration such measures as he may deem expedient, and at the commencement of each session of the General Assembly, and at the close of his term of office, give information by written message of the condition of the State, and he shall account to the General Assembly, as may be prescribed by law, for all moneys received and paid out by him from any funds subject to his order, with the vouchers therefor, and he shall at the commencement of each regular session present to the General Assembly estimates of the amount of money required to be raised by taxation for all purposes.

SEC. 12. The Governor shall have power to remit fines and forfeitures, under such rules and regulations as may be prescribed by law, and after conviction to grant reprieves, commutation of sentence and pardons (except in cases of treason and impeachment); but pardons in

cases of murder, arson, burglary, rape, assault with intent to commit rape, perjury, forgery, bribery and larceny, shall not relieve from civil and political disability unless specifically expressed in the pardon. Upon conviction of treason, the Governor may suspend the execution of the sentence and report the same to the General Assembly at the next regular session, when the General Assembly shall either pardon, commute the sentence, direct its execution, or grant further reprieve. He shall communicate to the general Assembly at every regular session each case of reprieve, commutation or pardon granted, with his reasons therefor; stating the name and crime of the convict, the sentence, its date, and the date of the reprieve, commutation or pardon.

SEC. 13. Every bill, which shall have passed both houses of the General Assembly, shall be presented to the Governor; if he approve, he shall sign it, but if not, he shall return it with his objections to that house in which it shall have originated, who shall enter the objections at large upon the journals, and the house to which such bill shall be returned, shall proceed to reconsider it; if after such reconsideration a majority of the whole number elected to that house, shall vote for the passage of such bill, it shall be sent with the objections, to the other house, by which it shall likewise be reconsidered; if approved by a majority of the whole number elected to that house, it shall become a law; but in such cases, the vote of both houses shall be determined by yeas and nays, and the names of the members voting for or against the bill, shall be entered upon the journals of each house respectively; if any bill shall not be returned by the Governor within five days (Sundays excepted) after it shall have been presented to him, the same shall be a law, in like manner as if he had signed it, unless the General Assembly by their adjournment prevent its return, in which case it shall not be a law. And every order, vote, or resolution, to which the concurrence of both houses may be necessary (except questions of adjournment, and of bringing on elections by the two houses, and of amending this constitution,) shall be presented to the Governor, and before the same shall take effect be approved by him, or being disapproved shall be repassed by both houses, according to the rules and limitations prescribed in the case of a bill.

SEC. 14. The Governor shall have power to disapprove of any item or items of any bill making appropriations of money, embracing distinct items, and the part or parts of the bill approved shall be the law, and the item or items of appropriations disapproved shall be void, unless repassed according to the rules and limitations prescribed for the passage of other bills over the Executive veto, and he shall, in writing, state specifically the item or items he disapproves.

SEC. 15. In case of the impeachment of the Governor, his removal from office, death, refusal to qualify, resignation, absence from the State, or other disability, the President of the Senate shall exercise all the power and authority appertaining to the office of Governor, until the time appointed for the election of Governor shall arrive, or until the Governor who is absent or impeached, shall return or be acquitted, or other disability be removed, and if during such vacancy in the office of Governor, the President of the Senate shall be impeached, removed

from office, refuse to qualify, die, resign, be absent from the State, or be under any other disability, the Speaker of the House of Representatives shall in like manner administer the Government. If the Governor shall be absent from the State over twenty days, the Secretary of State shall notify the President of the Senate, who shall enter upon the duties of Governor, and if the Governor and President of the Senate shall both be absent from the State over twenty days, the Secretary of State shall notify the Speaker of the House of Representatives, and in such case he shall enter upon and discharge the duties of Governor, until the return of the Governor or President of the Senate.

SEC. 16. The President of the Senate and Speaker of the House of Representatives shall during the time they respectively administer the government, receive the same compensation which the Governor would have received if he had been employed in the duties of his office; Provided, That if the General Assembly shall be in session during such absence, they, or either of them, shall receive no compensation as members of the General Assembly while acting as Governor.

SEC. 17. No person shall, at one and the same time hold the office of Governor of this State and any other office, civil or military, either under this State, the United States, or any other State or government, except as otherwise provided in this constitution.

SEC. 18. The Governor shall be Commander-in-Chief of the militia and volunteer forces of the State, except when they shall be called into the service of the United States, and he may call out the same to execute the laws, suppress insurrection and repel invasion; but he need not command in person, unless directed to do so by a resolution of the General Assembly, and when acting in the service of the United States he shall appoint his staff and the General Assembly shall fix his rank.

SEC. 19. No person shall be eligible to the office of Secretary of State, State Treasurer, State Auditor, or Attorney General, unless he shall have been a citizen of the United States at least seven years, and shall have resided in this State at least five years next preceding his election, and shall be at least twenty-five years old when elected.

SEC. 20. There shall be a great seal of the State, which shall be used officially by the Governor; and the seal now in use shall continue to be used until another shall have been adopted by the General Assembly. The said seal shall be called the "Great Seal of the State of Alabama."

SEC. 21. The Secretary of State shall be the custodian of the seal of the State, and shall authenticate therewith all official acts of the Governor, his approval of laws and resolutions excepted. He shall keep a register of the official acts of the Governor, and when necessary shall attest them, and lay copies of same, together with copies of all papers relative thereto, before either House of the General Assembly, whenever required to do so, and shall perform such other duties as may be prescribed by law.

SEC. 22. All grants and commissions shall be issued in the name and by the authority of the State of Alabama, sealed with the great seal, signed by the Governor and countersigned by the Secretary of State.

SEC. 23. Should the office of Secretary of State, State Treasurer, State Auditor, Attorney General or Superintendent of Education become

vacant, for any of the causes specified in section fifteen of this article, the Governor shall fill the vacancy until the disability is removed or a successor elected and qualified.

SEC. 24. The State Treasurer, State Auditor, and Attorney General, shall perform such duties as may be prescribed by law. The State Treasurer and State Auditor shall every year, at a time the General Assembly may fix, make a full and complete report to the Governor, showing all receipts and disbursements of revenue, of every character, all claims audited and paid by the State, by items, and all taxes and revenue collected and paid into the treasury, and from what sources, and they shall make reports oftener on any matter pertaining to their office, if required by the Governor, or the General Assembly.

SEC. 25. The State Auditor, State Treasurer, and Secretary of State shall not, after the expiration of the terms of those now in office, receive to their use any fees, costs, perquisites of office, or compensation other than their salaries as prescribed by law; and all fees that may be payable by law, for any service performed by either of such officers, shall be paid in advance into the State Treasury.

SEC. 26. A Sheriff shall be elected in each county by the qualified electors thereof, who shall hold his office for the term of four years, unless sooner removed, and shall be ineligible to such office as his own successor; Provided, That sheriffs elected on the first Monday in August, 1877, or at such other time as may be prescribed by law for the election in that year, shall hold their offices for the term of three years, and until their successors shall be elected and qualified. In the year 1880, at the general election for members to the General Assembly, sheriffs shall be elected for four years as herein provided. Vacancies in the office of sheriff shall be filled by the Governor, as in other cases, and the person appointed shall continue in office until the next general election in the county for sheriff, as provided by law.

ARTICLE VI.

JUDICIAL DEPARTMENT.

SECTION 1. The judicial power of the State shall be vested in the Senate, sitting as a court of impeachment, a supreme court, circuit courts, chancery courts, courts of probate, such inferior courts of law and equity, to consist of not more than five members, as the General Assembly may from time to time establish, and such persons as may be by law invested with powers of a judicial nature.

SEC. 2. Except in cases otherwise directed in the constitution, the supreme court shall have appellate jurisdiction only, which shall be co-extensive with the State, under such restrictions and regulations, not repugnant to this constitution, as may from time to time be prescribed by law; Provided, That said court shall have power to issue writs of injunction, habeas corpus, quo-warranto, and such other remedial and original writs as may be necessary to give it a general superintendence and control of inferior jurisdictions.

SEC. 3. The supreme court shall be held at the seat of government, but if that shall have become dangerous from any cause, it may adjourn to a different place.

SEC. 4. The State shall be divided by the General Assembly into convenient circuits, not to exceed eight in number, unless increased by a vote of two-thirds of the members of each house of the General Assembly, and no circuit shall contain less than three nor more than twelve counties, and for each circuit there shall be chosen a judge, who shall for one year next preceding his election and during his continuance in office reside in the circuit for which he is elected.

SEC. 5. The circuit court shall have original jurisdiction in all matters, civil and criminal, within the State, not otherwise excepted in the constitution; but in civil cases only when the matter or sum in controversy exceeds fifty dollars.

SEC. 6. A circuit court shall be held in each county in the State at least twice in every year; and the judges of the several circuits may hold court for each other when they deem it expedient, and shall do so when directed by law; Provided, That the judges of the several circuit courts shall have power to issue writs of injunction returnable into courts of chancery.

SEC. 7. The General Assembly shall have power to establish a court or courts of chancery, with original and appellate jurisdiction. The State shall be divided by the General Assembly into convenient chancery divisions, not exceeding three in number, unless an increase shall be made by a vote of two-thirds of each house of the General Assembly, taken by yeas, and nays and entered upon the journals; and the divisions shall be divided into districts, and for each division there shall be a chancellor, who shall, at the time of his election or appointment, and during his continuance in office, reside in the division for which he shall have been elected or appointed.

SEC. 8. A chancery court shall be held in each district, at a place to be fixed by law, at least once in each year; and the chancellors may hold courts for each other, when they deem it necessary.

SEC. 9. The General Assembly shall have power to establish in each county within the State a court of probate, with general jurisdiction for the granting of letters testamentary and of administration, and for orphans' business.

SEC. 10. The judges of the supreme court, circuit courts and chancellors shall, at stated times, receive for their services a compensation, which shall not be diminished during their official terms, but they shall receive no fees or perquisites, nor hold any office (except judicial offices) of profit or trust under this State, or the United States, or any other power, during the term for which they have been elected.

SEC. 11. The supreme court shall consist of one chief justice, and such number of associate justices as may be prescribed by law.

SEC. 12. The chief justice and associate justices of the supreme court, judges of the circuit courts, probate courts and chancellors, shall be elected by the qualified electors of the State, circuits, counties, and chancery divisions for which such courts may be established, at such time as may be prescribed by law.

SEC. 13. The judges of such inferior courts of law and equity as may be by law established, shall be elected or appointed, in such mode as the General Assembly may prescribe.

SEC. 14. The judges of the supreme court, circuit courts, and chancellors, and the judges of city courts, shall have been citizens of the United States, and of this State, for five years next preceding their election or appointment, and shall be not less than twenty-five years of age, and learned in the law.

SEC. 15. The chief justice and associate justices of the supreme court, circuit judges, chancellors and probate judges, shall hold office for the term of six years, and until their successors are elected or appointed and qualified; and the right of such judges and chancellors to hold their offices for the full term, hereby prescribed, shall not be affected by any change hereafter made by law in any circuit, division or county in the mode or time of election.

SEC. 16. The judges of the supreme court shall, by virtue of their offices, be conservators of the peace throughout the State; the judges of the circuit courts, within their respective circuits, and the judges of the inferior courts, within their respective jurisdictions, shall, in like manner, be conservators of the peace.

SEC. 17. Vacancies in the office of any of the judges or chancellors of this State shall be filled by appointment by the Governor, and such appointee shall hold his office for the unexpired term, and until his successor is elected or appointed and qualified.

SEC. 18. If in any case, civil or criminal, pending in any circuit, chancery or city court in this State, the presiding judge or chancellor shall, for any legal cause, be incompetent to try, hear or render judgment in such cause, the parties or their attorneys of record, if it be a civil case, or the solicitor or other prosecuting officer, and the defendant or defendants, if it be a criminal case, may agree upon some disinterested person practicing in the court, and learned in the law, to act as special judge or chancellor, to sit as a court and to hear, decide and render judgment in the same manner and to the same effect as a judge of the circuit or city court or chancellor sitting as a court might do in such case. If the case be a civil one and the parties or their attorneys of record do not agree, or if the case be a criminal one and the prosecuting officer and the defendant or defendants do not agree upon a special judge or chancellor, or if either party in a civil cause is not represented in court, the clerk of the circuit or city court, or register in chancery, of the court in which said cause is pending, shall appoint the special judge or chancellor, who shall preside, try and render judgment as in this section provided.

SEC. 19. The General Assembly shall have power to provide for the holding of circuit and chancery courts in this State, when the judges or chancellors thereof fail to attend regular terms.

SEC. 20. No judge of any court of record, in this State, shall practice law in any of the courts of this State or of the United States.

SEC. 21. Registers in chancery shall be appointed by the chancellors of the divisions, and shall hold office during the term of the chancellor making such appointment; and such registers shall receive as compensation for their services only such fees and commissions as may be specifically prescribed by law.

SEC. 22. A clerk of the supreme court shall be appointed by the judges

thereof, and shall hold office during the term of the judges making the appointment, and clerks of such inferior courts as may be established by law shall be appointed by the judges thereof, and shall hold office during the term of the judge making such appointment.

SEC. 23. Clerks of the circuit court shall be elected by the qualified electors in each county, for the term of six years. Vacancies in such office shall be filled by the Governor for the unexpired term.

SEC. 24. The clerk of the supreme court and registers in chancery may be removed from office by the judges of the supreme court and chancellors respectively, for cause, to be entered at length upon the records of the court.

SEC. 25. A solicitor for each judicial circuit shall be elected by joint ballot of the General Assembly, who shall be learned in the law, and who shall, at the time of his election, and during his continuance in office, reside in the circuit for which he is chosen, and whose term of office shall be for six years; Provided, That the General Assembly, at the first session thereof, after the ratification of this constitution, shall, by joint ballot, elect a solicitor for each judicial circuit of the State, whose term of office shall begin on Tuesday after the first Monday in November, 1876, and continue for four years; And, provided, that the General Assembly may, when necessary, provide for the election or appointment of county solicitors.

SEC. 26. There shall be elected by the qualified electors of each precinct of the counties not exceeding two justices of the peace and one constable. Such justices shall have jurisdiction in all civil cases wherein the amount in controversy does not exceed \$100, except in cases of libel, slander, assault and battery, and ejectment. In all cases tried before such justices, the right of appeal, without prepayment of costs, shall be secured by law; Provided, that the Governor may appoint one notary public for each election precinct in counties, and one for each ward in cities of over 5,000 inhabitants, who, in addition to the powers of notary, shall have and exercise the same jurisdiction as justices of the peace within the precincts and wards for which they are respectively appointed; Provided, that notaries public without such jurisdiction may be appointed. The term of office of such justice and notaries public shall be prescribed by law.

SEC. 27. An attorney-general shall be elected by the qualified electors of the State at the same time and places of election of members of the General Assembly, and whose term of office shall be for two years, and until his successor is elected and qualified. After his election he shall reside at the seat of government and shall be the law officer of the State, and shall perform such duties as may be required of him by law.

SEC. 28. The style of all process shall be "The State of Alabama," and all prosecutions shall be carried on in the name and by the authority of the same, and shall conclude, "Against the peace and dignity of the State."

ARTICLE VII.

IMPEACHMENTS.

SECTION 1. The Governor, Secretary of State, Auditor, Treasurer,

Attorney General, Superintendent of Education, and Judges of the Supreme Court may be removed from office for willful neglect of duty, corruption in office, habitual drunkenness, incompetency, or any offense involving moral turpitude while in office, or committed under color thereof, or connected therewith, by the Senate, sitting as a court for that purpose, under oath or affirmation, on articles or charges preferred by the House of Representatives.

SEC. 2 The chancellors, judges of the circuit courts, judges of the probate courts, solicitors of the circuits and judges of the inferior courts from which an appeal may be taken directly to the supreme court, may be removed from office for any of the causes specified in the preceding section, by the supreme court, under such regulations as may be prescribed by law.

SEC. 3. The sheriffs, clerks of the circuit, city or criminal courts, tax collectors, tax assessors, county treasurers, coroners, justices of the peace, notaries public, constables, and all other county officers, mayors and intendants of incorporated cities and towns in this State, may be removed from office for any of the causes specified in section one of this article, by the circuit, city or criminal court of the county in which such officers hold their office, under such regulations as may be prescribed by law; Provided, that the right of trial by jury and appeal in such cases be secured.

SEC. 4. The penalties in cases arising under the three preceding sections shall not extend beyond removal from office and disqualification from holding office under the authority of this State, for the term for which he was elected or appointed; but the accused shall be liable to indictment, trial and punishment as prescribed by law.

ARTICLE VIII.

SUFFRAGE AND ELECTIONS.

SECTION 1. Every male citizen of the United States, and every male person of foreign birth who may have legally declared his intention to become a citizen of the United States before he offers to vote, who is 21 years old or upwards, possessing the following qualifications, shall be an elector, and shall be entitled to vote at any election by the people, except as hereinafter provided:

1st. He shall have resided in the State at least one year immediately preceding the election at which he offers to vote.

2d. He shall have resided in the county for three months, and in the precinct, district or ward for thirty days immediately preceding the election at which he offers to vote; Provided, that the General Assembly may prescribe a longer or shorter residence in any precinct in any county, or in any ward in any incorporated city or town having a population of more than 5,000 inhabitants, but in no case to exceed three months; And provided, that no soldier, sailor or marine in the military or naval service of the United States shall acquire a residence by being stationed in this State.

SEC. 2. All elections by the people shall be by ballot, and all elections by persons in a representative capacity shall be *à la voce*.

SEC. 3. The following classes shall not be permitted to register, vote or hold office :

1st. Those who shall have been convicted of treason, embezzlement of public funds, malfeasance in office, larceny, bribery, or other crime punishable by imprisonment in the penitentiary.

2d. Those who are idiots or insane.

SEC. 4. Electors shall in all cases, except treason, felony or breach of the peace, be privileged from arrest during their attendance at elections or while going to or returning therefrom.

SEC. 5. The General Assembly shall pass laws, not inconsistent with this constitution, to regulate and govern elections in this State, and all such laws shall be uniform throughout the State. The General Assembly may, when necessary, provide by law for the registration of electors throughout the State, or in any incorporated city or town thereof, and when it is so provided no person shall vote at any election unless he shall have registered as required by law.

SEC. 6. It shall be the duty of the General Assembly to pass adequate laws giving protection against the evils arising from the use of intoxicating liquors at all elections.

SEC. 7. Returns of elections for all civil officers who are to be commissioned by the Governor, except Secretary of State, State Auditor, State Treasurer and Attorney General, and for members of the General Assembly, shall be made to the Secretary of State.

ARTICLE IX.

REPRESENTATION.

SECTION 1 The whole number of senators shall be not less than one-fourth nor more than one-third of the whole number of representatives.

SEC. 2. The house of representatives shall consist of not more than one hundred members, who shall be apportioned by the General Assembly among the several counties of the State according to the number of inhabitants in them respectively, as ascertained by the decennial census of the United States for the year 1880; which apportionment, when made, shall not be subject to alteration until the first session of the General Assembly after the next decennial census of the United States shall have been taken.

SEC. 3. It shall be the duty of the General Assembly, at its first session after the taking of the decennial census of the United States in 1880, and after each subsequent decennial census, to fix by law the number of representatives, and apportion them among the several counties of the State; Provided, that each county shall be entitled to at least one representative.

SEC. 4. It shall be the duty of the General Assembly at its first session after the taking of the decennial census of the United States in 1880, and after each subsequent decennial census, to fix by law the number of senators, and to divide the State into as many senatorial districts as there are senators, which districts shall be as nearly equal to each other in the number of inhabitants as may be, and each shall be entitled to one senator and no more; and which districts, when formed, shall not

be changed until the next apportioning session of the General Assembly after the next decennial census of the United States shall have been taken. No county shall be divided between two districts, and no district shall be made of two or more counties not contiguous to each other.

SEC. 5. Should the decennial census of the United States from any cause not be taken, or if when taken the same as to this State is not full or satisfactory, the General Assembly shall have power at its first session after the time shall have elapsed for the taking of said census, to provide for an enumeration of all the inhabitants of this State, and once in each ten years thereafter, upon which it shall be the duty of the General Assembly to make the apportionment of representatives and senators as provided for in this article.

SEC. 6. Until the General Assembly shall make an apportionment of representatives among the several counties, after the first decennial census of the United States as herein provided, the counties of Autauga, Baldwin, Bibb, Blount, Calhoun, Chilton, Cherokee, Choctaw, Clarke, Clay, Cleburne, Coffee, Colbert, Conecuh, Coosa, Covington, Crenshaw, Dale, DeKalb, Elmore, Etowah, Escambia, Fayette, Franklin, Geneva, Henry, Lauderdale, Marion, Morgan, Monroe, Marshall, Randolph, Sanford, Shelby, St. Clair, Walker, Washington and Winston shall each have one representative; the counties of Barbour, Bullock, Butler, Chambers, Greene, Hale, Jackson, Jefferson, Limestone, Lawrence, Lowndes, Lee, Macon, Marengo, Perry, Pickens, Pike, Russell, Sumter, Talladega, Tallapoosa, Tuscaloosa and Wilcox shall have each two representatives; the county of Madison shall have three representatives; the counties of Dallas and Montgomery shall have each four representatives, and the county of Mobile shall have five representatives.

SEC. 7. Until the General Assembly shall divide the State into senatorial districts as herein provided, the senatorial districts shall be as follows:

First district, Lauderdale and Limestone; second district, Colbert and Lawrence; third district, Morgan, Winston and Blount; fourth district, Madison; fifth district, Marshall, Jackson and DeKalb; sixth district, Cherokee, Etowah and St. Clair; seventh district, Calhoun and Cleburne; eighth district, Talladega and Clay; ninth district, Randolph and Chambers; tenth district, Macon and Tallapoosa; eleventh district, Bibb and Tuscaloosa; twelfth district, Franklin, Marion, Fayette and Sanford; thirteenth district, Walker, Jefferson and Shelby; fourteenth district, Greene and Pickens; fifteenth district, Coosa, Elmore and Chilton; sixteenth district, Lowndes and Autauga; seventeenth district, Butler and Conecuh; eighteenth district, Perry; nineteenth district, Choctaw, Clarke and Washington; twentieth district, Marengo; twenty-first district, Monroe, Escambia and Baldwin; twenty-second district, Wilcox; twenty-third district, Henry, Coffee, Dale and Geneva; twenty-fourth district, Barbour; twenty-fifth district, Pike, Crenshaw and Covington; twenty-sixth district, Bullock; twenty-seventh district, Lee; twenty-eighth district, Montgomery; twenty-ninth district, Russell; thirtieth district, Dallas; thirty-first district, Sumter; thirty-second district, Hale; thirty-third district, Mobile.

ARTICLE X.

EXEMPTED PROPERTY.

SECTION 1. The personal property of any resident of this State to the value of \$1,000, to be selected by such resident, shall be exempted from sale on execution, or other process of any court, issued for the collection of any debt contracted since the 13th day of July, 1868, or after the ratification of this constitution.

SEC. 2. Every homestead, not exceeding eighty acres, and the dwelling and appurtenances thereon, to be selected by the owner thereof, and not in any city, town or village, or in lieu thereof, at the option of the owner, any lot in the city, town or village, with the dwelling and appurtenances thereon, owned and occupied by any resident of this State, and not exceeding the value of two thousand dollars, shall be exempted from sale on execution or any other process from a court, for any debt contracted since the 13th day of July, 1868, or after the ratification of this constitution. Such exemption, however, shall not extend to any mortgage lawfully obtained, but such mortgage or other alienation of such homestead, by the owner thereof, if a married man, shall not be valid without the voluntary signature and assent of the wife to the same.

SEC. 3. The homestead of a family, after the death of the owner thereof, shall be exempt from the payment of any debts contracted since the 13th day of July, 1868, or after the ratification of this constitution, in all cases, during the minority of the children.

SEC. 4. The provisions of sections one and two of this article shall not be so construed as to prevent a laborer's lien for work done and performed for the person claiming such exemption, or a mechanic's lien for work done on the premises.

SEC. 5. If the owner of a homestead die, leaving a widow, but no children, such homestead shall be exempt, and the rents and profits thereof shall inure to her benefit.

SEC. 6. The real and personal property of any female in this State, acquired before marriage, and all property, real and personal, to which she may afterwards be entitled by gift, grant, inheritance or devise, shall be and remain the separate estate and property of such female, and shall not be liable for any debts, obligations and engagements of her husband, and may be devised or bequeathed by her the same as if she were a *femme sole*.

SEC. 7. The right of exemptions hereinbefore secured, may be waived by an instrument in writing, and when such waiver relates to realty, the instrument must be signed by both the husband and wife, and attested by one witness.

ARTICLE XI.

TAXATION.

SECTION 1. All taxes levied on property in this State shall be assessed in exact proportion to the value of such property; Provided, however, the General Assembly may levy a poll tax, not to exceed one dollar and fifty cents on each poll, which shall be applied exclusively in aid of the public school fund in the county so paying the same.

SEC. 2. No power to levy taxes shall be delegated to individuals or private corporations.

SEC. 3. After the ratification of this constitution, no new debt shall be created against or incurred by this State or its authority, except to repel invasion or suppress insurrection, and then only by a concurrence of two-thirds of the members of each house of the General Assembly, and the vote shall be taken by yeas and nays and entered on the journals; and any act creating or incurring any new debt against this State, except as herein provided for, shall be absolutely void; Provided, the Governor may be authorized to negotiate temporary loans, never to exceed \$100 000, to meet deficiencies in the treasury, and until the same is paid no new loan shall be negotiated. Provided further, that this section shall not be so construed as to prevent the issuance of bonds in adjustment of existing State indebtedness.

SEC. 4. The General Assembly shall not have the power to levy, in any one year, a greater rate of taxation than three-fourths of one per centum on the value of the taxable property within this State.

SEC. 5. No county in this State shall be authorized to levy a larger rate of taxation, in any one year, on the value of the taxable property therein, than one-half of one per centum; Provided, that to pay debts existing at the ratification of this constitution, an additional rate of one-fourth of one per cent. may be levied and collected, which shall be exclusively appropriated to the payment of such debts or the interest thereon. Provided further, that to pay any debt or liability now existing against any county, incurred for the erection of the necessary public buildings or other ordinary county purposes, or that may hereafter be created for the erection of necessary public buildings or bridges, any county may levy and collect such special taxes as may have been or may hereafter be authorized by law, which taxes so levied and collected shall be applied exclusively to the purposes for which the same shall have been levied and collected.

SEC. 6. The property of private corporations, associations and individuals of this State, shall forever be taxed at the same rate; Provided, this section shall not apply to institutions or enterprises devoted exclusively to religious, educational or charitable purposes.

SEC. 7. No city, town or other municipal corporation other than provided for in this article, shall levy or collect a larger rate of taxation, in any one year on the property thereof, than one-half of one per centum of the value of such property, as assessed for State taxation during the preceding year; Provided that for the payment of debts existing at the time of the ratification of this constitution, and the interest thereon, an additional rate of one per centum may be collected to be applied exclusively to such indebtedness; and provided, this section shall not apply to the city of Mobile, which city may, until the 1st day of January, 1879, levy a tax not to exceed the rate of one per centum, and from and after that time a tax not to exceed the rate of three-fourths of one per centum to pay the expenses of the city government, and may also, until the first day of January, 1879, levy a tax not to exceed the rate of one per centum, and from and after that time a tax not to exceed the rate of three-fourths of one per centum to pay the existing indebtedness of said city and the interest thereon.

SEC. 8. At the first session of the General Assembly after the ratification of this constitution, the salaries of the following officers shall be reduced at least 25 per centum, viz: Governor, Secretary of State, State Auditor, State Treasurer, Attorney General, Superintendent of Education, Judges of the Supreme and Circuit Courts, and Chancellors. And after said reduction the General Assembly shall not have the power to increase the same, except by a vote of a majority of all the members elected to each house, taken by yeas and nays and entered on the journals. Provided, this section shall not apply to any of said officers now in office.

SEC. 9. The General Assembly shall not have the power to require the counties or other municipal corporations to pay any charges which are now payable out of the State Treasury.

ARTICLE XII.

MILITIA.

SECTION 1. All able bodied male inhabitants of this State, between the ages of 18 and 45 years, who are citizens of the United States, or have declared their intention to become such citizens, shall be liable to military duty in the militia of the State.

SEC. 2. The General Assembly in providing for the organization, equipment, and discipline of the militia, shall conform as nearly as practicable to the regulations for the government of the armies of the United States.

SEC. 3. Each company and regiment shall elect its own company and regimental officers; but if any company or regiment shall neglect to elect such officers within the time prescribed by law, they may be appointed by the Governor.

SEC. 4. Volunteer organizations of infantry, cavalry and artillery may be formed in such manner and under such restrictions, and with such privileges as may be provided by law.

SEC. 5. The militia and volunteer forces shall in all cases, except treason, felony and breach of the peace, be privileged from arrest during their attendance at musters, parades and elections, and in going to and returning from the same.

SEC. 6. The Governor shall, except as otherwise provided herein, be commander-in-chief of the militia and volunteer forces of the State except when in the service of the United States, and shall, with the advice and consent of the Senate, appoint all general officers, whose term of office shall be for four years. The Governor, the generals, and regimental and battalion commanders shall appoint their own staffs, as may be provided by law.

SEC. 7. The General Assembly shall provide for the safe keeping of the arms, ammunition and accoutrements, military records, banners and relics of the State.

SEC. 8. The officers and men of the militia and volunteer forces shall not be entitled to or receive any pay, rations or emoluments when not in actual service.

ARTICLE XIII.

EDUCATION.

SECTION 1. The General Assembly shall establish, organize and maintain a system of public schools throughout the State, for the equal benefit of the children thereof, between the ages of 7 and 21 years; but separate schools shall be provided for the children of citizens of African descent.

SEC. 2. The principal of all funds arising from the sale or other disposition of lands or other property which has been or may hereafter be granted or entrusted to this State, or given by the United States for educational purposes, shall be preserved inviolate and undiminished; and the income arising therefrom shall be faithfully applied to the specific objects of the original grants or appropriations.

SEC. 3. All lands or other property given by individuals or appropriated by the State for educational purposes, and all estates of deceased persons who die without leaving a will or heir, shall be faithfully applied to the maintenance of the public schools.

SEC. 4. The General Assembly shall also provide for the levying and collection of an annual poll tax, not to exceed one dollar and fifty cents on each poll, which shall be applied to the support of the public schools in the counties in which it is levied and collected.

SEC. 5. The income arising from the sixteenth section trust fund, the surplus revenue fund, until it is called for by the United States Government, and the funds enumerated in sections three and four of this article, with such other moneys, to be not less than one hundred thousand dollars per annum, as the General Assembly shall provide by taxation or otherwise, shall be applied to the support and maintenance of the public schools, and it shall be the duty of the General Assembly to increase, from time to time, the public school fund, as the condition of the treasury and the resources of the State will admit.

SEC. 6. Not more than four per cent. of all moneys raised, or which may hereafter be appropriated for the support of public schools shall be used or expended otherwise than for the payment of teachers employed in such schools; Provided, That the General Assembly may, by a vote of two-thirds of each house, suspend the operation of this section.

SEC. 7. The supervision of the public schools shall be vested in a superintendent of education, whose powers, duties, term of office and compensation shall be fixed by law. The superintendent of education shall be elected by the qualified voters of the State, in such manner and at such time as shall be provided by law.

SEC. 8. No money raised for the support of the public schools of the State shall be appropriated to or used for the support of any sectarian or denominational school.

SEC. 9. The State University, and the Agricultural and Mechanical College shall each be under the management and control of a Board of Trustees. The Board for the University shall consist of two members from the congressional district in which the University is located, and one from each of the other congressional districts in the State. The Board for the Agricultural and Mechanical College shall consist of two members from the congressional district in which the college is located,

and one from each of the other congressional districts in the State. Said trustees shall be appointed by the Governor, by and with the advice and consent of the Senate, and shall hold office for a term of six years, and until their successors shall be appointed and qualified. After the first appointment each board shall be divided into three classes, as nearly equal as may be. The seats of the first class shall be vacated at the expiration of two years, and those of the second class in four years, and those of the third class at the end of six years from the date of appointment, so that one-third may be chosen biennially. No trustee shall receive any pay or emolument other than his actual expenses incurred in the discharge of his duties as such. The Governor shall be *ex officio* President, and the Superintendent of Education *ex officio* a member of each of said Boards of Trustees.

SEC. 10. The General Assembly shall have no power to change the location of the State University, or the Agricultural and Mechanical College, as now established by law, except upon a vote of two-thirds of the members of the General Assembly, taken by yeas and nays and entered upon the journals.

SEC. 11. The provisions of this article, and of any act of the General Assembly passed in pursuance thereof, to establish, organize and maintain a system of public schools throughout the State, shall apply to Mobile county only so far as to authorize and require the authorities designated by law to draw the portion of the funds to which said county will be entitled for school purposes, and to make reports to the Superintendent of Education as may be prescribed by law. And all special incomes and powers of taxation as now authorized by law for the benefit of public schools in said county, shall remain undisturbed until otherwise provided by the General Assembly; Provided, That separate schools for each race shall always be maintained by said school authorities.

ARTICLE XIV.

CORPORATIONS—PRIVATE CORPORATIONS.

SECTION 1. Corporations may be formed under general laws, but shall not be created by special act, except for municipal, manufacturing, mining, immigration, industrial and educational purposes, or for constructing canals, or improving navigable rivers and harbors of this State, and in cases where, in the judgment of the General Assembly, the objects of the corporation can not be attained under general laws. All general laws and special acts passed pursuant to this section, may be altered, amended or repealed.

SEC. 2. All existing charters, or grants of special or exclusive privileges, under which a *bona fide* organization shall not have taken place and business been commenced in good faith, at the time of the ratification of this constitution, shall thereafter have no validity.

SEC. 3. The General Assembly shall not remit the forfeiture of the charter of any corporation now existing, or alter or amend the same, or pass any general or special law for the benefit of such corporation, other than in execution of a trust created by law or by contract, except upon

the condition that such corporation shall thereafter hold its charter subject to the provisions of this constitution.

SEC. 4. No foreign corporation shall do any business in this State without having at least one known place of business, and an authorized agent or agents therein, and such corporation may be sued in any county where it does business, by service of process upon an agent anywhere in this State.

SEC. 5. No corporation shall engage in any business other than that expressly authorized in its charter.

SEC. 6. No corporation shall issue stock or bonds, except for money, labor done, or money or property actually received; and all fictitious increase of stock or indebtedness shall be void. The stock and bonded indebtedness of corporations shall not be increased, except in pursuance of general laws, nor without the consent of the persons holding the larger amount in value of stock first obtained at a meeting to be held after thirty days notice given in pursuance of law.

SEC. 7. Municipal and other corporations and individuals, invested with the privilege of taking private property for public use, shall make just compensation for the property taken, injured, or destroyed by the construction or enlargement of its works, highways or improvements, which compensation shall be paid before such taking, injury or destruction. The General Assembly is hereby prohibited from depriving any person of an appeal from any preliminary assessment of damages against any such corporations or individuals made by viewers or otherwise; and the amount of such damages in all cases of appeal shall, on the demand of either party, be determined by a jury according to law.

SEC. 8. Dues from private corporations shall be secured by such means as may be prescribed by law, but in no case shall any stockholder be individually liable otherwise than for the unpaid stock owned by him or her.

SEC. 9. No corporation shall issue preferred stock without the consent of the owners of two-thirds of the stock of said corporation.

SEC. 10. The General Assembly shall have the power to alter, revoke or amend any charter of incorporation now existing, and revokable at the ratification of this constitution, or any that may hereafter be created, whenever in their opinion it may be injurious to the citizens of the State, in such manner, however, that no injustice shall be done to the corporations. No law hereafter enacted shall create, renew or extend the charter of more than one corporation.

SEC. 11. Any association or corporation organized for the purpose, or any individual, shall have the right to construct and maintain lines of telegraph within this State, and connect the same with other lines, and the General Assembly shall, by general law of uniform operation, provide reasonable regulations to give full effect to this section. No telegraph company shall consolidate with, or hold a controlling interest in the stock or bonds of any other telegraph company owning a competing line, or acquire, by purchase, or otherwise, any other competing line of telegraph.

SEC. 12. All corporations shall have the right to sue, and shall be subject to be sued, in all courts, in like cases as natural persons.

SEC. 13. The term corporation, as used in this article, shall be construed to include all joint stock companies, or any associations having any of the powers or privileges of corporations, not possessed by individuals or partnerships.

BANKS AND BANKING.

SEC. 14. The General Assembly shall not have the power to establish or incorporate any bank, or banking company, or monied institution for the purpose of issuing bills of credit, or bills payable to order or bearer, except under the conditions prescribed in this constitution.

SEC. 15. No bank shall be established otherwise than under a general banking law, nor otherwise than upon a specie basis.

SEC. 16. All bills, or notes issued as money, shall be, at all times, redeemable in gold or silver, and no law shall be passed sanctioning, directly or indirectly, the suspension, by any bank or banking company, of specie payment.

SEC. 17. Holders of bank notes, and depositors, who have not stipulated for interest, shall, for such notes and deposits, be entitled, in case of insolvency, to the preference of payment over all other creditors.

SEC. 18. Every bank or banking company shall be required to cease all banking operations within twenty years from the time of its organization, unless the General Assembly shall extend the time, and promptly thereafter close its business; but shall have corporate capacity to sue, and shall be liable to suit, until its affairs and liabilities are fully closed.

SEC. 19. No bank shall receive directly or indirectly, a greater rate of interest than shall be allowed by law to individuals for lending money.

SEC. 20. The State shall not be a stockholder in any bank, nor shall the credit of the State ever be given, or loaned, to any banking company, association, or corporation.

RAILROADS AND CANALS.

SEC. 21. All railroads and canals shall be public highways, and all railroad and canal companies shall be common carriers. Any association or corporation, organized for the purpose shall have the right to construct and operate a railroad between any points in this State, and to connect, at the State line, with railroads of other States. Every railroad company shall have the right with its road to intersect, connect with, or cross any other railroad, and shall receive and transport, each, the other's freight, passengers, and cars, loaded or empty, without delay or discrimination.

SEC. 22. The General Assembly shall pass laws to correct abuses and prevent unjust discrimination and extortion in the rates of freights and passenger tariffs on railroads, canals and rivers in this State.

SEC. 23. No railroad or other transportation company shall grant free passes, or sell tickets or passes at a discount, other than as sold to the public generally, to any member of the General Assembly, or to any person holding office under this State or the United States.

SEC. 24. No street passenger railway shall be constructed within the limits of any city or town, without the consent of its local authorities.

SEC. 25. No railroad, canal, or other transportation company, in ex-

istence at the time of the ratification of this constitution, shall have the benefit of any future legislation by general or special laws, other than in execution of a trust created by law or by contract, except on the condition of complete acceptance of all the provisions of this article.

ARTICLE XV.

OATH OF OFFICE.

SECTION 1. All members of the General Assembly, and all officers, executive and judicial, before they enter upon the execution of the duties of their respective offices, shall take the following oath or affirmation, to-wit:

"I, ———, solemnly swear [or affirm, as the case may be,] that I will support the Constitution of the United States, and the Constitution of the State of Alabama, so long as I continue a citizen thereof; and that I will faithfully and honestly discharge the duties of the office upon which I am about to enter, to the best of my ability, so help me God."

Which oath may be administered by the presiding officer of either House of the General Assembly, or any officer authorized by law to administer an oath.

ARTICLE XVI.

MISCELLANEOUS PROVISIONS.

SECTION 1. No person holding an office of profit under the United States, except postmasters whose annual salary does not exceed two hundred dollars, shall, during his continuance in such office, hold any office of profit under this State; nor shall any person hold two offices of profit at one and the same time under this State, except justices of the peace, constables, notaries public and commissioners of deeds.

SEC. 2. It is made the duty of the General Assembly to enact all laws necessary to give effect to the provisions of this constitution.

ARTICLE XVII.

MODE OF AMENDING THE CONSTITUTION.

SECTION 1. The General Assembly may, whenever two-thirds of each House shall deem it necessary, propose amendments to this constitution, which, having been read on three several days, in each House, shall be duly published, in such manner as the General Assembly may direct, at least three months before the next general election for Representatives, for the consideration of the people; and it shall be the duty of the several returning officers, at the next general election which shall be held for Representatives, to open a poll for the vote of the qualified electors on the proposed amendments, and to make a return of said vote to the Secretary of State; and if it shall thereupon appear that a majority of all the qualified electors of the State, who voted at such election, voted in favor of the proposed amendments, said amendments shall be valid to all intents and purposes as parts of this constitution, and the result of such election shall be made known by proclamation of the Governor.

SEC. 2. No convention shall hereafter be held for the purpose of altering or amending the constitution of this State, unless the question of convention or no convention shall be first submitted to a vote of all the electors of the State and approved by a majority of those voting at said election.

SCHEDULE.

In order that no injury or inconvenience may arise from the alterations and amendments made by this Constitution to the existing Constitution of this State, and to carry this Constitution into effect, it is hereby ordained and declared—

1. That all laws in force at the ratification of this Constitution, and not inconsistent therewith, shall remain in full force, until altered or repealed by the General Assembly; and all rights, actions, prosecutions, claims and contracts of this State, counties, individuals or bodies corporate, not inconsistent with this Constitution, shall continue to be as valid as if this Constitution had not been ratified.

2. That all bonds executed by or to any officer of this State, all recognizances, obligations, and all other instruments executed to this State, or any subdivision or municipality thereof, before the ratification of this Constitution, and all fines, taxes, penalties and forfeitures due and owing to this State, or any subdivision, or to any municipality thereof; and all writs, suits, prosecutions, claims and causes of action, except as herein otherwise provided, shall continue and remain unaffected by the ratification of this Constitution. All indictments which may have been found, or which may hereafter be found, for any crime or offense committed before the ratification of this Constitution, shall be proceeded upon in the same manner as if this Constitution had not been ratified.

3. That all the executive and judicial officers, and all other officers in this State, who shall have been elected at the election held in this State, on third day of November, eighteen hundred and seventy-four, or who may have been appointed since that time, and all members of the present General Assembly and all that may hereafter be elected members of the present General Assembly, and all other officers holding office at the time of the ratification of this Constitution, except such as hold office under any act of the General Assembly, shall continue in office and exercise the duties thereof until their respective terms shall expire, as provided by the present Constitution and laws of this State.

4. This Constitution shall be submitted to the qualified electors of this State for ratification or rejection, as authorized and required by an act of the General Assembly of this State, entitled "An act to provide for the calling of a Convention to revise and amend the Constitution of this State," approved nineteenth day of March, A. D., eighteen hundred and seventy-five.

5. If at said election the said Constitution shall be found to have been ratified by a majority of all the qualified electors voting at said election, the said new Constitution, so ratified, shall go into effect as the new Constitution of the State of Alabama within the time stated in the proclamation of the Governor, and shall thereafter be binding and obligatory as such upon all the people of this State, according to the provisions of

said act, approved nineteenth day of March, eighteen hundred and seventy-five.

6. That instead of the publication as required by section twelve of said act, the Governor of the State is hereby authorized to take such steps as will give general publicity and circulation to this Constitution in as economical manner as practicable.

7. That all laws requiring an enumeration of the inhabitants of this State during the year eighteen and seventy-five, are hereby avoided.

8. That the Board of Education of this State is hereby abolished.

9. The salaries of the Executive and Judicial and all other officers of this State who may be holding office at the time of the ratification of this Constitution, and the pay of the present members of the General Assembly shall not be affected by the provisions of this Constitution.

10

LERoy POPE WALKER, *President.*



HAND BOOK OF ALABAMA.

Part First.

Origin of the name, ALABAMA—Geography; and Historical Chronology of the State; with an account of the Indians once living here.

NAME OF ALABAMA.

The STATE of Alabama derived its name from the great river Alabama, which drains its centre. The RIVER took its name from the *Alabamas*, an early tribe of Indians who once lived upon its banks, at or near the site of the present city of Montgomery. From what the TRIBE derived its name, or the meaning thereof, is not known.*

GEOGRAPHY OF ALABAMA.

General Boundaries of Alabama.—The general boundaries of Alabama are as follows: Beginning at the point where the 31st parallel of north latitude crosses the Perdido River, thence east to the western boundary line of Georgia, thence northerly along said line to the southern boundary of Tennessee, thence west along the southern boundary line of Tennessee, crossing the Tennessee River, and on to the second intersection of that river by said line,

*The popular idea of the origin of the name, *Alabama*, and the meaning of the word, *Here We Rest*, took its rise in a pretty legend connected with this tribe of Indians. It is said, they were expelled from Northern Mexico during the rude assaults upon that kingdom by Cortez, and in their wanderings in search of other homes, crossed a noble river, now the *Alabama*, when one of their chieftains, impressed with the beauty of the new-found country, and the security which the mighty stream flowing behind him afforded against pursuing enemies, struck his spear in the ground beneath the shade of a magnificent oak, and exclaimed, *Alabama!* that is to say, *Here We Rest*; and from this incident, it is generally believed the tribe was thereafter known as the *Alabamas*. The old seal of the State (a skeleton map of Alabama, suspended on a tree), and which continued to be the seal until changed in 1868, was evidently designed to perpetuate this supposed incident.

thence up that river to the mouth of Big Bear Creek, thence by a direct line to the north-west corner of Washington county in this State as originally formed, thence southerly along the line of Mississippi to the Gulf of Mexico, thence eastwardly, including all islands within six leagues of the shore, to the Perdido River, thence up that river to the place of beginning.

Boundary Between Alabama and Georgia.—The west bank of the Chattahoochee River to the point on Miller's Bend next above the mouth of Uchee Creek, thence in a direct line to NickaJack.

Boundary Between Alabama and Florida.—The "Mound" or "Ellicott" line, blazed all the way from near Irwin's Mills on the Chattahoochee River to the Perdido, and further designated by mounds of earth one mile apart.

Latitude and Longitude of Alabama.—Alabama lies between latitude $30^{\circ} 10'$ and 35° N.; and longitude $84^{\circ}, 53'$ and $88^{\circ} 30' W.$

Area of Alabama.—Square miles, 50,722; acres, 32,462,080.

Population of Alabama.—The population of Alabama, by the Federal census of 1870, was 996,992.

Islands of Alabama.—These are four in number, and lie in the Gulf of Mexico near the entrance to Mobile Bay. They are: Dauphin, Petit Bois, Mon Louis, and Turtle Back Islands.

Sea Coast of Alabama.—Alabama has only about sixty miles of sea coast, extending from the Perdido River to the Mississippi line; a large portion of the southern boundary of the State being cut off from the Gulf of Mexico by an intervening strip of Florida.*

Mountain Ranges and General Topography of Alabama.—The Alleghany Mountains exhaust themselves in North-eastern Alabama, rendering that portion of the State's surface uneven and broken, although the elevation is nowhere very great. The range extends west, with a slight bend to the south, and forms the dividing line between the waters of the Tennessee River and the other rivers of Alabama. The former emptying into the Ohio at Paducah, and all the latter ultimately flowing southward into the Gulf of Mexico. From this range the face of the country slopes to the south, and is somewhat uneven as far as the centre of the State, where begin the rolling prairies, pine barrens and fertile alluvial bottoms. The extreme southern portion is flat, and but slightly elevated above the level of the Gulf.

*Efforts have been made to annex this strip to Alabama, but so far without success. A Commission was at one time appointed to treat with Florida on the subject. Alabama proposed to pay \$1,000,000 for it.

Rivers of Alabama.

Alabama,	Little Tombigbee,
Apalacha,	Locust Fork Bl'k Warrior,
Black Warrior,	Looxapalila,
Buttahatchee,	Middle,
Cahaba,	Mobile,
Chattahoochee,	Nepulгах,
Chattooga,	North,
Choctawhatchee,	North B'h Fish,
Conecuh,	Paint Rock,
Coosa,	Patsaliga,
East B'h Choctawhatchee,	Pea,
East B'h Fish,	Perdido,
Elk,	Sipsey,
Escambia,	Spanish,
Flint—1,	Tallapoosa,
Flint—2,	Tennessee,
Little,	Tensaw,
Little Cahaba,	Tombigbee,
Little Tallapoosa,	West B'h Choctawhatchee.

Cities and Principal Towns of Alabama.*

NAME.	POPULATION.
Mobile.....	32,034
Montgomery†.....	10,588
Selma.....	6,484
Huntsville.....	4,907
Eufaula.....	3,185
Greenville.....	2,856
Marion.....	2,646
Opelika.....	2,500
Florence.....	2,003
Talladega.....	1,933
Grantville.....	1,761
Greensboro.....	1,760
Tuscaloosa.....	1,689
Demopolis.....	1,539
Union Springs.....	1,455
Uniontown.....	1,444
LaFayette.....	1,382
Prattville.....	1,346
Tuscumbia.....	1,214
Birmingham.....	1,200
Wetumpka.....	1,137
Auburn.....	1,088
Troy.....	1,058

*Arranged according to population. Figures taken from Federal census of 1870, and no place given having population less than 1,000.

†Capital.

HISTORICAL CHRONOLOGY OF ALABAMA.

The History of Alabama, although not abounding in those glowing events which ordinarily contribute to the interest of history—such as wars, political revolutions, battles, sieges, etc., etc., has, nevertheless, many important and striking incidents which deserve attention from the pen of the chronicler. In a work of the limits and character of the present, however, nothing more than a bare outline of such events can be given, and those seeking fuller information are referred to the several histories of Alabama, mention of which is made elsewhere in this book. Below are given the dates, in order of time, of the most important events in the State's history :

- 1540—July 2. The territory of what is now the State of Alabama, entered by DeSoto, the Spanish adventurer, while searching for gold.*
 1540—October 18. DeSoto fought the great battle of *Maubila*, or *Mauvila*, with the tribe of Indians subsequently known as the Mobilians.†
 1540—November 29 DeSoto passed out of Alabama into Mississippi, where is now the modern county of Lowndes, Mississippi.‡
 1699—January 31. The French, under Iberville and Bienville, while sailing in search of the mouth of the Mississippi River, discover *Massacre*, afterwards *Dauphin* Island.‡ ||.
 1702—January. Bienville established a settlement on Massacre Island.

*DeSoto, with about 1,000 Cavaliers, splendidly armed and equipped, landed on the west coast of Florida, May 30th, 1539, and marching through Florida and Georgia to Northeastern Georgia, crossed over that State and entered Alabama in what is now Cherokee County. From there, he marched in a southerly direction through Alabama to within one hundred miles of the Gulf Coast, and thence westwardly to the Mississippi River, which he discovered in May, 1541. Of course, it will be borne in mind that, in DeSoto's time, all the States mentioned were mere wilds, uninhabited except by Indians, and called by one general name—Florida. For a full account of DeSoto's march see Pickett's History of Alabama, vol. 1, chapter 1.

†Pickett, in his History of Alabama, vol. 1, p. 27, locates the site of this battle, which is said by Bancroft to have been one of the bloodiest Indian battles ever fought on the soil of the United States, at what is now Choctaw Bluff, Clarke County, on the Alabama River, about twenty-five miles above its confluence with the Tombigbee. The result of the battle was very disastrous to DeSoto, and although victorious, his army became badly demoralized, and never recovered from its effects. DeSoto lost, in killed, eighty-two of his Cavaliers, and killed 6,000 Indians.

‡DeSoto died on the Mississippi in May, 1542, of a malignant fever contracted in its swamps, and was buried in the middle of the river, on a dark, stormy night to prevent Indian desecration of his remains.

§Previous to this, in April, 1682, LaSalle, a gifted young Frenchman residing in French Canada, had, with a few daring companions, descended the Mississippi from near its headwaters to the mouth, and there, upon a small, marshy elevation, in full view of the sea, taken formal possession of the country in the name of his King—Louis XIV, the then reigning sovereign of France, and in whose honor the territory was named *Louisiana*. LaSalle could never afterwards find the mouth from the sea. Iberville and Bienville found it shortly after passing Massacre Island.

||The French gave the name of *Massacre* to the island from the quantity of human bones discovered on its surface.

- 1702—January. Bienville established the original site of Mobile, on Mobile Bay, at the mouth of Dog River, and built there Fort *St. Louis de la Mobile*.* †
- 1711—March. Bienville established the present site of the city of Mobile.‡
- 1711—October. A pirate ship from Jamaica debarked on Massacre Island and plundered its inhabitants.
- 1714—June. Fort Toulouse built by Bienville near the site of the present city of Tuskegee, Ala.§
- 1719—August 19. A Spanish squadron bombarded the French on Massacre Island, but were repulsed.||
- 1720—December. The capital of the Louisiana Colony transferred from Mobile to Biloxi, Miss.
- 1721—March 17. First African slaves landed at Mobile.**
- 1735— ———. Fort Tombecbe established by Bienville on the Little Tombecbe River, at what is now Jones' Bluff.
- 1743—May. . Bienville, who, for more than forty-six years had been Governor of the Louisiana Colony, resigned and returned to France.
- 1763—February 18. France ceded to England all the soil of the Louisiana Colony east of the Mississippi, and embracing the settlement at Mobile.
- 1780—March 14. Fort Charlotte—originally Fort Conde—and the Mobile settlement taken from the English by Don Galvez, the Spanish Commander.††
- 1782—November 30. On the treaty of peace between England and the United States, the former relinquished to the latter her claim to the soil east of the Mississippi, and north of latitude 31°.‡‡

*Mobile City took its name from Mobile Bay, and the Bay received its name from a tribe of Indians once living upon its shores. These were the Indians who so heroically fought DeSoto at *Maubila* in 1540, the remnant of whom, surviving that sanguinary battle, were found here by the early French, and by them called *Mobilians*—probably a French transformation of the word *Maubila*.

†The seat of Government of the Louisiana Colony, which, at that time, included the soil of the present States of Mississippi and Alabama, was fixed here by Bienville in 1702, and continued until 1711.

‡The lower settlement at the mouth of Dog River, being subject to inundation, Bienville resolved to remove his capital to more elevated ground, and did so, to the spot where the city of Mobile now stands. Here he built another fort, of wood, which in a few years gave place to the extensive brick fortress, *Fort Conde* of the French, and *Fort Charlotte* of the English. The French called it *Conde*, in honor of the French nobleman of that name; and the English called it *Charlotte*, to honor their young Queen consort, at the time they became possessed of it.

§For the very interesting history connected with this old Fort, consult Pickett's *History of Alabama*, vol. 1, p. 221.

||France and Spain were then at war.

**These were a cargo of 120, and they were sold to the Colonists at an average of \$176 each, to be paid for in tobacco or rice, in three annual installments. They were the first slaves introduced into the Louisiana Colony, but their arrival was rapidly followed by others.

††Spain and England were then at war.

‡‡Notwithstanding this cession on the part of England, Spain continued to assert a title to all the territory east of the Mississippi, west of Georgia and south of latitude 32° 28', claiming it by virtue of her victory over the English at Mobile, in 1780.

- 1795—October 27. Spain relinquished to the United States her claim to the territory east of the Mississippi and north of latitude 31°. *
- 1799—September. Capt. Ellicott, an English Engineer Officer, completed the running of his famous boundary line along the 31st parallel of north latitude from the Mississippi to the Chattahoochee River. †
- 1802—April 24. Georgia relinquished to the United States her claim to the control of the country out of which ultimately grew the States of Alabama and Mississippi. ‡
- 1807—February 19. Aaron Burr arrested in what is now Washington County, Alabama. §
- 1807—December. St. Stephens laid off in town lots, and a road cut from there to Natchez, Miss.
- 1813—April. The settlement at Mobile and the part of Alabama south of latitude 31°, relinquished by Spain to the United States.
- 1813—July. Bloody war commenced between the Creek Indians, and the white settlers of Georgia and what is now Alabama.
- 1813—July 27. Battle of Burnt Corn fought. ||
- 1813—August 30. Fort Mims' Massacre. **
- 1813—October. Gen. Andrew Jackson marched from Tennessee into what is now Alabama with 2,000 Tennesseans, to avenge the massacre at Fort Mims.
- 1813—November. Jackson routed the Creeks with great slaughter at the battle of Talladega.
- 1813—November 12. Celebrated canoe fight on the Alabama River near Claiborne. ††
- 1814—March 27. Jackson drove the Creeks from their fortifications on the Horse Shoe Bend of the Tallapoosa River, in the modern county of Tallapoosa, Ala., killing a great number and virtually ending the war.

* Spain reserved at the time of this cession, the strip of the now State of Alabama, south of the thirty-first parallel of north latitude, and continued to hold the settlement at Mobile until 1813.

† This line is known as the "Ellicott" line, and at present, for the most part marks the southern boundary of Alabama. Owing to the duplicity of the Spaniards, Capt. Ellicott was three years running the line.

‡ The money consideration for this surrender was \$1,250,000.

§ Burr was endeavoring to make his escape to Pensacola, where he expected to leave the country. He was arrested by Capt. Gaines, and confined in Fort Stoddard, until taken to Washington, D. C.

|| This was the first in the long and terrible Creek war that followed, and its site was in the northern portion of what is now Conecuh County, Ala.

** For a detailed account of this horrible butchery of men, women and children, see Pickett's History of Alabama, vol. 2, p. 264, *et seq.* Of the 553 souls in the Fort, less than fifty escaped the fury of the savage Creeks. Fort Mims, a square stockade enclosing about an acre, was located in the northern part of what is now Baldwin County, Ala., about one mile to the east of the Alabama River, and two below the Cut-off.

†† In this fight Jerry Austill, Sam Dale, and James Smith were paddled in a frail canoe by a negro named Caesar, to the middle of the river, where they attacked and killed nine of eleven athletic Creek Indians, in another canoe; the two, who escaped, sprang into the river at the beginning of the fight and swam ashore. No one of Austill's party was seriously injured.

- 1814—April. Fort Jackson established by Gen. Jackson on the site of Bienville's old Fort Toulouse.
- 1814—August 19. Treaty of peace concluded at Fort Jackson between Gen. Jackson and the Creeks. *
- 1814—September 15. British sea and land attack on Fort Bowyer repulsed by a portion of Jackson's command. †
- 1815—February 13. Fort Bowyer surrendered to the British.
- 1815—April 1. The British evacuate Mobile Point and Dauphin Island, pursuant to the treaty of Ghent.
- 1817—March 1. Alabama territory carved out of Mississippi territory, with St. Stephens as the seat of government, and Wm. W. Bibb, Territorial Governor.
- 1818—January 19. First Alabama Territorial Legislature convened at St. Stephens.
- 1818—July. French refugees found Demopolis.
- 1818—November. Second and last Territorial Legislature assembled at St. Stephens.
- 1819—March 2. Congress authorized the people of Alabama Territory to form a State government.
- 1819—May 3. Election for delegates to frame a Constitution for the State of Alabama. ‡
- 1819—July 5. Convention to frame a Constitution for the State of Alabama, assembled at Huntsville.
- 1819—August 2. Constitutional Convention concluded its labors and adjourned.
- 1819—September 20. First general election in Alabama under the new Constitution, for Governor and members of the Legislature. §
- 1819—October 25. First State Legislature assembled at Huntsville.
- 1819—November 9. Wm. W. Bibb inaugurated first Governor of the State of Alabama.
- 1819—December 14. Joint resolution of Congress admitting the State of Alabama into the Union.
- 1819—December 18. Act of the General Assembly approved. to establish the University of Alabama.
- 1820—May 8. First term of the Supreme Court of the State of Alabama held at Cahaba. ||
- 1820—October 23. Second State Legislature assembled at Cahaba.
- 1820—December 18. Supplementary University Act approved.
- 1820—December 21. State Bank chartered and located at Cahaba, the seat of Government. Capital \$2,000,000
- 1825—April 3. Gen. Lafayette visited Montgomery.

* The Creeks had, at this time, been terribly punished, and the Fort Mims massacre fearfully avenged by Jackson and others, and they were glad to sue for peace.

† This old fort was located on Mobile Point, and was built in 1813. Fort Morgan now occupies its site. The attack mentioned was during the war of 1812.

‡ Voting continued for two days—May 3d and 4th.

§ The voting was continued for two days—September 20th and 21st.

|| Cahaba became the seat of the State Government in 1820, by virtue of Art. III, sec. 29, of the Constitution of 1819.

- 1826—State Capital and archives removed from Cahaba to Tuscaloosa.
- 1828—Work on the original University buildings begun at Marrs Spring, one and a quarter miles east of Tuscaloosa Court-house.
- 1831—April 17. University of Alabama opened to students.
- 1832—January 13. Tusculumbia, Courtland, and Decatur Railroad incorporated—the first constructed in the State.
- 1832—January 14. Act of the General Assembly approved, organizing the Supreme Court of Alabama, as now constituted.
- 1832—January 21. Montgomery branch of the State bank incorporated with a capital of \$800,000.
- 1832—November 16. Decatur branch of the State Bank incorporated with a capital of \$1,000,000.
- 1832—December 14. Mobile branch of the State Bank incorporated with a capital of \$2,000,000.
- 1837—Great financial revulsion in Alabama, and in the United States, generally.
- 1839—January 26. Alabama Penitentiary incorporated.
- 1839—August. Great drouth throughout Alabama and the entire South, beginning about the first of this month and continuing until the end of January of the next year.
- 1842—February 8. Alabama Penitentiary opened for the reception of convicts, and the penal code adapted to penitentiary punishments became operative.
- 1846—January 28. General Assembly, by joint vote, selected Montgomery as the future site of the State Capital.*
- 1846—February 4. Act of the General Assembly approved, placing the State Bank and its branches in process of liquidation.
- 1847—November 2. Original capitol building at Montgomery completed and turned over to Commissioners appointed by the State to receive it.
- 1847—December 6. General Assembly for the first time met in the new capitol at Montgomery.
- 1849—December 14. Capitol at Montgomery destroyed by fire.†
- 1849—December 17. Gov. Collier inaugurated in the Montgomery Methodist Church, the capitol having been burned three days before.
- 1850—January. The work of rebuilding the capitol at Montgomery commenced.‡
- 1851—November. Present capitol at Montgomery completed.
- 1852—February 6. Alabama Insane Hospital incorporated.

*A popular vote had been previously taken on the question of removing the seat of government from Tuscaloosa to some other more accessible and central point, and the proposition was carried. When the Legislature balloted for the new site the competing cities were Mobile, Montgomery, Selma, Huntsville, Tuscaloosa, Marion, Wetumpka, and Statesville. Montgomery was chosen on the sixteenth ballot, when the vote stood: Montgomery 68, Tuscaloosa 39, Selma 11, Wetumpka 9, Mobile 3.

†It was never definitively ascertained how the fire originated, some supposing it accidental and some thinking it the work of an incendiary. The flames were first discovered issuing from the roof of the Representative Hall, about 1:15 P. M., and while both Houses were in session. The fire burned rapidly and in less than three hours the building was in ruins. Most of the archives were saved.

‡The present capitol occupies the site of the original building.

- 1854—February 17. First Legislative enactment establishing a system of free public schools in Alabama.
- 1856—February 18. Important supplementary act to establish free schools in Alabama.
- 1860—January 27. The State Institution at Talladega, for the instruction of the deaf and dumb, and the blind, incorporated.
- 1860—February 24. General Assembly adopted a joint resolution requiring the Governor to order a general election for delegates to a State Convention in the event of the elevation of Abraham Lincoln to the Presidency of the United States.
- 1860—December 24—General election for delegates to a State Convention under the call of Gov. Moore, pursuant to the above joint resolution.
- 1861—January 7. State Convention assembled at Montgomery to take action in view of the election of Abraham Lincoln.*
- 1861—January 11. Ordinance of Secession adopted.†
- 1861—January 12. Alabama Senators and Representatives in Congress withdraw in a body on hearing of the adoption of the Ordinance of Secession.
- 1861—February 4. Delegates from six seceding States, comprising a Provisional Congress, assembled at Montgomery to organize the Government of the Confederate States.
- 1861—February 18. Jefferson Davis inaugurated, at Montgomery, first President of the Confederate States.
- 1861—March 21. State Convention adjourned, first having ratified the Constitution of the Confederate States, which had been submitted for such action.
- 1861—April 15. First patient admitted to the Alabama Insane Hospital.
- 1864—August 5. Farragut's fleet entered Mobile Bay and encountered the Confederate war vessels.‡
- 1864—August 7. Fort Gaines capitulated to Farragut.
- 1864—August 23. Fort Morgan capitulated to Farragut.
- 1865—April 2. Selma stormed and captured by Wilson.
- 1865—April 4. University buildings at Tuscaloosa burned by Croxton.
- 1865—April 8. Spanish fort abandoned to Canby.
- 1865—April 9. Confederate defenses at Blakely stormed and taken by Canby.
- 1865—April 12. Mobile occupied by Federal troops.
- 1865—April 12. Montgomery occupied by Wilson.
- 1865—June 21. President Johnson, by proclamation, appointed Lewis E. Parsons Provisional Governor of Alabama.

*This was known as the *Secession Convention*.

†Gov. Moore prior to, but in anticipation of the adoption of this ordinance, seized Forts Morgan and Gaines, and Mt. Vernon Arsenal, in Alabama, and sent troops to Pensacola to co-operate in the seizure of the Navy Yard and forts at that point.

‡In the naval engagement which ensued, the Confederate fleet made a gallant resistance but was forced to succumb to Farragut's superior strength. It was in this battle that the United States Monitor, *Tecumseh*, was sunk by a torpedo, and carried down over 300 men, whose bones now lie entombed within the heavy iron casing of the wreck.

- 1865—July 20. Gov. Parsons, by proclamation, ordered a general election throughout Alabama for delegates to a State Convention, called by him to assemble at Montgomery, Sept. 12, 1865.
- 1865—August 31. General election for delegates, pursuant to Gov. Parsons' proclamation.
- 1865—September 12. Constitutional Convention assembled at Montgomery.
- 1865—September 30. Constitutional Convention adjourned. *
- 1865—November 6. Election for State officers and members of the General Assembly—first after the war.
- 1865—November 20.—General Assembly convened at Montgomery—first after the war.
- 1865—December 13. Gov. Patton inaugurated.
- 1865—December 20. State Government turned over to Gov. Patton by Gov. Parsons.
- 1867—January. New University buildings begun at Tuscaloosa.
- 1867—March 2. Congress passed the Reconstruction Act remanding the State to a semi-territorial condition and subjecting it to military rule. †
- 1867—March 23. Supplementary Act of Congress passed, prescribing the method by which the State might frame a new Constitution and apply for admission into the Union.
- 1867—November 5. Reconstruction Convention assembled at Montgomery. ‡
- 1868—February 4. Question of the adoption of the Constitution, framed by the Reconstruction Convention, voted on by the people.
- 1868—July 13. Wm. H. Smith, first Governor of the Reconstructed State, inaugurated.
- 1868—July. New University buildings at Tuscaloosa completed.
- 1869—April. New University buildings opened to students.
- 1870—November 8. Robert B. Lindsey elected Governor of Alabama. §
- 1870—November 26. Gov. Lindsey inaugurated.
- 1874—November 24. George S. Houston inaugurated Governor of Alabama. ||
- 1875—March 19. Act of the General Assembly approved, calling a Convention to revise and remodel the Constitution of the State.
- 1875—August 3. General election for delegates to the State Convention of this year.
- 1875—September 6. State Convention assembled at Montgomery.

* Before adjourning, the Convention made such changes in the organic law of the State as were demanded by the new order of things, and called a general election for Governor, other State officers, and members of the General Assembly.

† It will be remembered that Congress refused to recognize the State Government established by President Johnson.

‡ This is known also as the Bayonet Convention.

§ This date is inserted because it marks an important event in the State's history—*i. e.*, the success, for the time being, of the Democratic and Conservative Party.

|| This date is inserted for the reason that, with the inauguration of Governor Houston, came the beginning of those reforms in the administration of the State Government which have been since so vigorously and successfully prosecuted.

1875—October 2. State Convention adjourned, after adopting the present Constitution of Alabama, and submitting it to the people for ratification or rejection.

1875—November 16. The Constitution of 1875 ratified by the people at a general election held on this day.

INDIANS OF ALABAMA.

The Indian tribes found in Alabama, by the first French and English settlers, and remaining here until removed to their Western reservations, were :

The Muscogeas, or Creeks, called *Creeks* by the English from the number of beautiful streams flowing through their vast country. This was the most extensive of the Alabama tribes, and, in time, absorbed a great number of lesser ones, including the once powerful *Alabamas*, from whom the river and State of Alabama took their name. Removed to the West in 1837.

The Choctaws, to whom the English gave the name of *Flat-heads*, from their habit of flattening the foreheads of their infants by a process of compression. What was left of the *Mobilians* by DeSoto, eventually became incorporated with this tribe. The Choctaws were removed to the West in 1830.

The Chickasaws, one of the most war-like, fierce and powerful tribes in North America. Removed to the West in 1834.

The Cherokees, from *CHERA*, *fire*—their Prophets being called *CHERATAGHGE*, that is, *men of divine fire*. Removed to the West in 1836.*

*There were many other small tribes in Alabama, but, in the course of time, they all became absorbed in one or the other of these four great ones.

Part Second.

Government of Alabama—Its State and County Organization—Political Divisions—and Laws Relating to Elections and the Holding of Office.

GOVERNMENT OF ALABAMA.

The Government of Alabama is Republican in form, to accord with Art. IV, sec. 4, of the Constitution of the United States; and sec. 5 of the Act for the admission of the State into the Union, passed March 2d, 1819.

The State has a written Constitution, the last revision of which was by the Convention assembled at Montgomery, September 6th, 1875.* This Constitution is the supreme law of the State, and any enactment of the General Assembly, in conflict with it, is null and void. It can be altered or amended only in a very guarded way, distinctly pointed out in the instrument itself, and no Convention for this purpose can be held until after the question of *Convention* or *No Convention* shall have been first submitted to the people and voted on; so careful were its framers to prevent hasty and unwise changes in its provisions.

The Declaration of Rights, embraced in this Constitution, and which enunciates the great principles of liberty crystallized in *Magna Charta*, and improved upon by the restless spirit of independence since, declares, among other things, that all men are equally free and independent; that all persons resident in this State, born in the United States, or naturalized, or who shall have legally declared their intention to become citizens of the United States, are citizens of Alabama, possessing equal civil and political rights; that all political power is inherent in the people, and all free governments are founded on their authority; and instituted for their benefit, and that, therefore, they have at all times an inalienable and indefeasible right to change their form of government in such manner as they may deem expedient; that no religion shall be established by law, nor preference given to any re-

*For the full text of this Constitution, as revised in 1875, see *ante*.

ligious sect or mode of worship; that no one shall be compelled by law to attend any place of worship, nor to pay tithes or taxes for the support of any ministry; that no religious test shall be required as a qualification to any office of public trust under this State, and that the civil rights, privileges and capacities of any citizen shall not be, in any manner, affected by his religious principles; that any citizen may speak, write and publish his sentiments on all subjects, being responsible for the abuse of that liberty; that the people shall be secure in their persons, houses, papers, and possessions from unreasonable seizures or searches, and that no warrant shall issue for such purpose without probable cause, supported by oath or affirmation; that in all criminal prosecutions the accused shall have a right to be heard by himself and counsel, or either, to demand the nature and cause of the accusation, to have a copy thereof, to be confronted by the witnesses against him, to have compulsory process for obtaining witnesses in his favor, and, in all prosecutions by indictment, a speedy public trial by an impartial jury of the county or district in which the offense was committed, and shall not be compelled to give evidence against himself, nor be deprived of his life, liberty, or property but by due process of law; that no person shall be accused, or arrested, or detained, except in cases ascertained by law, and according to the forms which the same has prescribed, or punished, but by virtue of a law established and promulgated prior to the offense, and legally applied; that no person shall, for any indictable offense, be proceeded against criminally by information, except in a few specified cases;* that no person shall, for the same offense, be twice put in jeopardy of life or limb; that no person shall be debarred from prosecuting or defending before any tribunal in this State, by himself or counsel, any civil cause to which he is a party; that the trial by jury shall remain inviolate; that all courts shall be open; that every person for every injury shall have a legal remedy, and right and justice be administered without sale, denial or delay; that excessive fines shall not be imposed, nor cruel or unusual punishments inflicted; that all offenses, before conviction, shall be bailable, except capital offenses, when the proof is evident or the presumption great, and that excessive bail shall not, in any case, be required; that the writ of *habeas corpus* shall not be suspended by the authorities of this State; that treason against the State shall consist only in levying war against it, or adhering to its enemies, giving them aid and comfort, and that no person shall be convicted of treason except

*For these cases see *ante*, Constitution, Art. 1, sec. 9.

on the testimony of two witnesses to the same overt act, or on his own confession in open court. This Bill of Rights further inhibits attainder or corruption of blood, imprisonment for debt, suspension of laws except by the General Assembly, the passage of *ex post facto* laws, laws impairing the obligation of contracts, or making irrevocable grants of special privileges, the taking of private property, except for public uses and then only upon just compensation first made; secures to the citizens a right to assemble in a peaceable manner, and petition for a redress of grievances, and also to bear arms in defense of himself and the State; forbids standing armies except with the consent of the General Assembly, strictly subordinates the military to the civil power, and provides that no soldier shall be quartered on any citizen except in time of war, and then only in the manner prescribed by law; declares that no title of nobility, or hereditary distinction, shall ever be granted or conferred in this State; that immigration shall be encouraged, emmigration not prohibited, and every citizen free from forced exile; abolishes slavery in all its forms; and inhibits educational or property tests for suffrage or office.

STATE ORGANIZATION.

By its Constitution, the State is divided into three distinct, but co-ordinate branches—the Legislative, the Executive and the Judicial—each supreme in its own sphere, and free from unauthorized interference by the other.

The Legislative is the law-making department of the State Government, and consists of a *General Assembly*, composed of a *Senate* of not more than thirty-three members, and a *House of Representatives* of not more than one hundred, apportioned among the several Districts and counties of the State in a manner prescribed by the Constitution.* Senators are elected every four and Representatives every two years, on the first Monday in August.† The General Assembly meets biennially, at Montgomery, and its sessions are limited to fifty days. The Senate is presided over by a President, and the House of Representatives by a Speaker, chosen respectively by those bodies. Each House selects its own officers, and is the sole Judge of the election, returns, and qualifications of its members.

The Executive Department of the State Government is composed of a Governor, Secretary of State, Treasurer, Auditor, At-

*See *ante*, Constitution, Art. IX.

†For the qualifications of Senators and Representatives see *ante*, Constitution, Art. IV, sec. 4.

torney-General, and Superintendent of Education,* elected every two years, on the first Monday in August.†

The Governor is the head of the Executive Department; resides at the Capital; sees that the laws are faithfully executed; keeps the General Assembly informed as to the condition and welfare of the State; may remit fines and forfeitures in a manner prescribed by law; grants reprieves and commutations of sentence; has the power to pardon except in cases of treason and impeachment; approves or vetoes the enactments of the General Assembly; and is Commander-in-Chief of the military forces of the State. The salary of the Governor is \$3,000 a year. In case of his disqualification from any cause, the President of the Senate takes his place, and if the latter is disqualified also, the Speaker of the House.

The Secretary of State, like the Governor, is required to reside at the State Capital, and, next to him, is the most important officer of the Executive Department. He is the keeper of the Great Seal of the State, and has many important duties devolving upon him by the Constitution and laws of the State. His salary is \$1,800 a year, and his official bond \$10,000. In case of disqualification, the Governor appoints his successor.

The Treasurer also resides at the Capital, and is charged with the safe keeping and proper disbursement of the public funds of the State. His yearly salary is \$2,100, and his official bond \$250,000. The Governor fills his place in case of disqualification.

The Auditor keeps his office at the Capital, and it is his duty to audit and adjust the financial accounts of the State, and disbursements by the Treasurer can only be made on his warrant—in fact, he has general superintendence of the State's fiscal affairs, taxation, etc., and is one of the most important of the Executive officers. His salary is \$1,800 a year, and his official bond \$20,000. When disqualified from any cause, the Governor appoints his successor.

The Attorney General resides also at the Capital. He is the law officer of the State, and legal adviser of the Governor and other members of the Executive Department. He is required to attend on the part of the State to all criminal appeals pending in the Supreme Court, and to all important civil cases in which the State is a party. His annual salary is \$1,500, and his

*By the Constitution, Art. V, sec. 1, Sheriffs are made a part of the Executive Department, but for the purposes of this HAND-BOOK, they will be more properly mentioned under the head of County Organization, *post*.

†For the qualifications of these several officials, see *ante*, Constitution, Art. V.

official bond \$10,000. If disqualified from any cause the Governor appoints his successor.

The *Superintendent of Education* must keep his office at the Capital, and has supervision of the public schools of the State. His yearly salary is \$2,250, and his official bond \$15,000. In case of vacancy, the Governor appoints his successor.

The Judicial power of the State by the Constitution is vested in a Supreme Court, Circuit Courts, Chancery Courts, Probate Courts, Courts of the Justices of the Peace, and such other courts of law and equity, not to consist of more than five persons, as the General Assembly may from time to time establish. Under this grant of authority the General Assembly has established, in the principal cities of the State, courts known as City Courts; and in the counties, courts called County Courts, and also Courts of County Commissioners.*

The *Supreme Court* is the highest of the State Courts and the court of final resort. Its jurisdiction, except in the trial of certain impeachments,† and the exercise of its constitutional power to issue writs of injunction, *habeas corpus*, *quo warranto*, and such other remedial and original writs as are necessary to give it a general superintendence and control of inferior jurisdiction, is *appellate* only, co-extensive with the State. This court is held at the seat of State government, and consists, at present, of one Chief Justice and two Associate Justices, elected by the qualified voters of the State every six years at the general election on the first Monday in August.‡ Vacancies in the office of Justice of the Supreme Court are filled by appointment of the Governor. The regular session of this court begins on the first Tuesday in December in each year, and continues until the last day of the next July; but special sessions may be holden in the discretion of the Court. The annual salary of each Justice of the Supreme Court is \$3,000. The officers of the Court are a Clerk, appointed by the Justices, and who gives bond in the sum of \$5,000, and is paid fees; Marshal, and *ex-officio* Librarian of the State and Supreme Court libraries, appointed by the Justices, and whose official bond is in the sum of \$1,000, and annual salary \$2,000; Reporter, appointed by the Justices, who reports the opinions of the Court, and is paid \$2,000 a year; and a Secretary

*By the Constitution, Art. VI, sec. 1, *ante*, the Senate, sitting as a Court of Impeachment, is vested, also, with judicial power.

†See *ante*, Constitution, Art. VII, sec. 2.

‡The people ballot simply for *Justices of the Supreme Court*, and the Justices elected appoint one of their number *Chief Justice*. For the qualifications and general powers and duties of these Justices, see *ante*, Constitution, Art. VI.

to the Chief Justice, appointed by the Court, and paid six dollars a day for actual services rendered.*

The Circuit Courts. The State is, at present, divided into twelve Judicial Circuits, numbered consecutively from one to twelve.† Each circuit has a Judge, known as Circuit Judge, elected by the qualified voters of the circuit once in every six years, at the general election on the first Monday in August.‡ Vacancies in the office of Circuit Judge are filled by appointment of the Governor. His annual salary is \$2,250.§ The Constitution requires a Circuit Court to be holden in each county in the State at least twice in every year, and special terms may be held in the discretion of the Judge. The Circuit Court has original jurisdiction of all felonies and misdemeanors and of such actions and suits at law as are not cognizable before a Justice,|| and appellate jurisdiction of all causes cognizable before a Justice, and in such other cases as may be provided by law. It exercises, also, a general superintendence over all inferior jurisdictions. The Circuit Judge has authority to grant writs of *certiorari*, *supersedeas*, *quo warranto*, *mandamus*, and all other remedial and original writs, grantable by Judges at common law; and writs of injunctions and *ne-exeat*, returnable into Chancery. The officers of a Circuit Court are, the Circuit Court Clerk** in each county, and Solicitor†† in each circuit, with the Sheriff‡‡ as ministerial officer. Trial in the Circuit Court, except in a few instances, is by jury.

The Chancery Courts. The State is divided, at present, into five chancery divisions, namely: Northern, Southern, Middle, Eastern and Western, and the divisions are sub-divided into chancery districts.§§ For each division there is a Chancellor, and for each district an officer, styled Register in Chancery. The Chancellor is elected by the qualified voters of his division every six years, at the general election on the first Monday in August,

* The Attorney General, *ex officio*, is also an officer of the Supreme Court.

† For the counties composing each circuit and the times and places of holding courts therein, see Appendix.

‡ For the qualifications of Circuit Judges, see Constitution, Art. VI, ss. 4 & 14, *ante*

§ The salary until after 1880 is \$3,000.

|| For the civil and criminal jurisdiction of Justices, see *post*, *Justices of the Peace*.

** For the qualifications, term of office, powers and duties of this officer, see that title, *post*, COUNTY ORGANIZATION.

†† The Solicitor is the law officer of the State within his circuit, and prosecutes all violations of the law therein. He is elected by joint vote of the General Assembly, and holds office for six years. Vacancies in his office are filled by the Governor. He is paid fees according to his convictions.

‡‡ For the qualifications, term of office, powers and duties of this officer, see that title, *post*, COUNTY ORGANIZATION.

§§ For the counties composing the several chancery divisions and districts of the State, and the times and places of holding courts therein, see Appendix.

and the Register is appointed by the Chancellor. Vacancies in the office of Chancellor are filled by the Governor. The annual salary of the Chancellor is \$2,250.* The Register is paid fees. The powers and jurisdiction of Courts of Chancery extend to all civil causes in which a plain and adequate remedy is not provided in the other judicial tribunals; to all cases founded on a gambling consideration, so far as to sustain a bill of discovery, and grant relief; to subject the equitable title or claim to real estate to the payment of debts; and to such other cases as may be provided by law. Chancellors may also exercise the ordinary jurisdiction granted to that officer by the common law, in cases of necessity, when adequate provision has not been made for its exercise by some other officer, or in other courts, and with the exceptions, limitations and additions imposed by the laws of this State. The Courts of Chancery proceed without jury, but may call a jury for the trial of contested facts, or send the issue to the Circuit Court for such trial there. The Register in each district is to the Court of Chancery, what the Clerk in each county is to the Circuit Court, except that his powers and duties are more extended and his discretion greater. He administers all oaths in Chancery cases, and issues all process from his court, makes orders of publication for defendants, grants decrees *pro-confesso*, hears exceptions, issues attachments and process of sequestration, performs the duties of Master, makes interlocutory decrees and orders in vacation within certain restrictions, appoints receivers in vacation, and discharges many other important and necessary duties. The Sheriff is the ministerial officer of the Court of Chancery.

Probate Courts. A Judge, styled Judge of Probate, is elected in each county by the qualified voters thereof, once in every six years, at the general election on the first Monday in August. Vacancies in his office are filled by the Governor. This Judge gives bond in a sum not less than \$5,000, and is paid fees. He has original jurisdiction of the estates of decedents, minors, and persons of unsound mind; of the probate of wills; granting and revoking letters testamentary and of administration; the control of executors and administrators; the appointment and removal of guardians for minors and those of unsound mind; the binding out of apprentices and settling their disputes with masters; the allotment of dower in most cases; the partition of lands within their county; changing the names of persons; and of many other important matters. The Judge of Probate may

* \$3,000 until after 1880.

also administer oaths in a great variety of cases; and grant writs of *habeas corpus*, and writs of *certiorari* on any civil judgment of a Justice returnable into the Circuit Court. All deeds, conveyances, and other instruments required by law to be recorded, must be recorded in his office.

Justices of the Peace. Every county is divided into convenient election precincts, and within the limits of each of these are two Justices of the Peace, elected every four years, by the qualified voters of the precinct.* Vacancies in the office of Justice of the Peace are filled by the Governor. A Justice gives bond in the sum of \$1,000 and is paid fees. The Justice has original jurisdiction within his county of all actions founded on contract when the sum claimed does not exceed \$100;† of all actions founded on any wrong or injury, except slander, where the damages do not exceed \$50; of all actions of forcible entry and unlawful detainer; of all actions brought to recover specific property, where the value does not exceed \$50.‡ Except in a few cases the Justice proceeds without jury. In his ministerial capacity, a Justice has authority to administer oaths and take affidavits, except where the power is expressly restricted to some other officer, and to take and certify the acknowledgment or probate of deeds and conveyances required to be recorded. The criminal jurisdiction of a Justice, within his county, extends to the arrest, examination and discharge or commitment of all persons charged with felony or the higher grades of misdemeanors; and, concurrently with the County Court, he has jurisdiction, with the right of appeal only, of violations of Sunday, vagrancy, assaults, assaults and batteries, and affrays in which no stick or other weapon is used, and, when the value of the commodity does not exceed \$10, of larceny, obtaining money under false pretenses, embezzlement and receiving stolen or embezzled goods. He is, also, charged with a duty in reference to the failure of persons to work the public roads, deserters from ships, estrays, trespass by cattle upon enclosed land, and in many other important instances.§ He has jurisdiction, also, for the purpose of binding over persons to keep the peace; in bastardy cases; and for the issuance of search warrants. In all cases tried before a Justice, the right of appeal, without prepayment of costs is se-

* The next election for Justices of the Peace will be in August, 1880. After that they are to be elected every four years. The last election was in August, 1877.

† If the sum claimed does not exceed \$50 he has *exclusive* jurisdiction. When it exceeds \$50, and does not exceed \$100, he has jurisdiction *concurrently* with the Circuit Courts. Where the sum claimed exceeds \$100, he has no jurisdiction at all.

‡ A Justice has no jurisdiction in ejectment.

§ The Justice, as a rule, proceeds without jury.

cured by the Constitution. The Constable* is the ministerial officer of the court of a Justice.†

County Court. The Judge of Probate is, *ex-officio*, Judge of this court, which has original jurisdiction, concurrently with the Circuit and City Courts, of all misdemeanors committed within the county. As such Judge, he gives bond in the sum of \$5,000, and is paid fees. The Judge of the County Court is, also, its Clerk, but he has power to employ a Clerk at his own expense. This court holds monthly terms, but, in the discretion of the Judge, it may be opened any day for the trial of offenses of which it has cognizance, where the party charged cannot give bond for his appearance at the monthly term, or desires an immediate trial. The County Court proceeds without jury, unless the party demands a jury trial, in which case he is bound over for trial in the Circuit or City Court. Appeals lie from the County to the Circuit or City Court. The Sheriff is its ministerial officer.‡

The Courts of County Commissioners. In each county, there is a Court of Record, styled the Court of County Commissioners, composed of the Judge of Probate, as principal Judge, and four Commissioners, elected by the qualified voters of the county every four years, at the election on the first Monday in August.§ In case of a vacancy, it is filled by the Governor. These Commissioners are paid by the day for the time they are in attendance on the sittings of the court. Regular terms of this court are held on the second Monday in February and August, and the first Monday in April and November: but the time of holding such terms may be changed by the Court to suit the public convenience. Special terms when necessary may, also, be held. This court possesses original jurisdiction in relation to the establishment, change, or discontinuance of roads, bridges, causeways, and ferries, within the county; and has authority to direct and control the property of the county; to levy a general tax, for general, and a special tax, for particular county purposes; to examine, settle, and allow all accounts and claims chargeable against the county; to examine and audit the accounts of all officers having

* For the qualifications, term of office, powers and duties of the Constable, see that title, *post*, COUNTY ORGANIZATION.

† In addition to the regularly elected Justices, the Governor may appoint Notaries Public, with the jurisdiction of Justices. See *ante*, Constitution, Art. VI, sec. 26.

‡ For the organization and jurisdiction of the City Courts, reference is had to the several special statutes creating those courts. As a rule, it may be said, they are each presided over by a single Judge, that their officers are a Clerk and the Sheriff, and that, within their respective districts, they have jurisdiction concurrent with the Circuit Courts.

§ The last election for County Commissioners was in August, 1877. The next will be in August, 1880. After that, they will be elected every four years.

the care, management, collection or disbursement of money belonging to the county, or appropriated for its use and benefit; to make rules and regulations for the support of the poor in the county; and to exercise such other powers as are, or may be, given it by the laws of this State.

COUNTY ORGANIZATION.

At present, the State is divided into sixty-six counties, varying considerably in area and population; but each a body corporate.* The General Assembly may, by a two-thirds vote, change the boundaries of a county; but no new county can be formed of less extent than 600 square miles, and no existing county can be reduced below that area, and no new county can be formed which does not contain a sufficient number of inhabitants to entitle it to one representative, and, at the same time, leave the county or counties from which it is taken with population enough to entitle it or them to separate representation.†

The **County Seat** is the chief town in a county, where are located the county buildings, such as the county court-house, county jail, etc., and where the officials of the county reside and keep their offices. These officials are:

A Judge of Probate, who is, also, Judge of the County Court, and principal Judge of the Court of County Commissioners.‡

Four County Commissioners, who, with the Judge of Probate, compose the Court of County Commissioners.§

Two Justices of the Peace in each election precinct.||

A Circuit Court Clerk, elected by the qualified voters of the county, every six years on the first Monday in August, and vacancies in whose office are filled by the Governor. The Circuit Clerk gives bond in the sum of \$10,000, is paid fees, and charged with the duty and clothed with authority, to issue and sign all summons, writs, subpoenas, executions, and process emanating from his court, to keep the papers, books, dockets, and records belonging to his court, and to administer oaths and take affidavits in all cases in which the authority is not restricted to some other

* For the names of these counties, with their respective county seats, areas, and population, see Appendix.

† See *ante*, Constitution, Art. II, sec. 2.

‡ The powers and duties of this officer in each of the capacities named, were fully stated, when treating of the judicial branch of the State Organization, *ante*.

§ See *ante*, State Organization.

|| For qualifications, powers, and duties of Justices of the Peace, see *ante*, State Organization.

officer. He may appoint a deputy, or deputies, and invest him or them with full power to act in his stead.

A Sheriff, elected by the qualified voters of the county every four years on the first Monday in August,* and vacancies in whose office are filled by the Governor. The Sheriff gives bond in a sum not less than \$5,000, and receives his compensation in fees and commissions. He must have one deputy, and may have as many more as he thinks proper. The Sheriff is the ministerial officer of the Courts of Record in his county, and, either in person or by deputy, attends upon their sessions.† He is required to execute and return the process and orders of these courts, as well as of all other courts of record and officers of competent authority in the State. He is the custodian of the court house and jail of his county. His criminal authority is very extensive. He is the chief conservator of the peace within his county; has the safe keeping of all prisoners within his jurisdiction, and is charged with the duty of carrying into execution the sentences of the courts upon them. When the office of Sheriff is vacant, until filled by the Governor, and when the Sheriff, by reason of interest or from any other cause, is incompetent to act, the Coroner of the county discharges the duties of the office.‡

A Constable in each election precinct, elected by the qualified voters of the precinct every four years, on the first Monday in August,§ and vacancies in whose office are filled by the Governor. The Constable gives bond in the sum of \$1,000, and is paid fees. He is the ministerial officer of the Justices' Courts in his precinct, and a conservator of the peace within the county. In addition to his other duties, he is required to attend the terms of the Circuit Courts when summoned by the Sheriff for that purpose, and to execute and return all summons, executions, and other process to him directed by any lawful authority.

A Coroner, elected by the qualified voters of the county every four years, on the first Monday in August,|| and vacancies in whose office are filled by the Governor. The Coroner gives bond in the sum of \$2,000, and is paid fees. It is the general duty of the Coroner to hold inquests, and perform other duties

* The last election for Sheriffs was in August, 1877; the next will be in August, 1880; after that, they will be elected every four years, as stated.

† The Constable is the ministerial officer of the Justices' Courts in his precinct, and attends upon their sessions; but the Sheriff may, if he chooses, act as Constable.

‡ The Sheriff is a branch of the State Executive Department. See *ante*, Constitution, Art. V, sec. 1.

§ The last election for Constables was in August, 1877; the next will be in August, 1880; after that, they will be elected every four years, as stated.

|| The last election for Coroners was in August, 1877; the next will be in August, 1880; after that, they will be elected every four years, as stated.

as required by law. He acts as Sheriff when that office is vacant, and until a successor is appointed by the Governor; so, too, when the Sheriff is imprisoned, or is a party, and in other cases, when directed by the Judge of Probate.*

A County Treasurer, elected by the qualified voters of the county every four years, on the first Monday in August,† and vacancies in whose office are filled by the Governor. He gives bond in double of the estimated amount of the county revenue, and is paid such compensation as may be allowed him by the Court of County Commissioners, in no case exceeding five per centum on the money paid out by him, nor in any case, exceeding the aggregate sum of \$1,000 in any one year. It is the duty of the County Treasurer to receive and keep the money of his county, and to disburse the same according to law.

A Tax Assessor, elected by the qualified voters of the county, every four years on the first Monday in August,‡ and vacancies in whose office are filled by the Governor. Gives bond in the sum of \$2,000, and is paid commissions. He is charged with the duty of properly assessing, and returning for collection, the State and county revenue within his county.

A Tax Collector, elected by the qualified voters of the county, every four years, on the first Monday in August,§ and vacancies in whose office are filled by the Governor. His bond is in double the probable amount of taxes at any one time in his hands, and he is paid commissions on his collections. It is the duty of the Tax Collector to collect and faithfully pay over all taxes returned to him for collection, by the Assessor of the county.

A County Surveyor, appointed and removable by the Court of County Commissioners, and who holds office for three years, and is paid fees. It is the duty of the County Surveyor to execute and return all orders of surveys directed to him from any Court of Record in the State; and make all surveys of land or lots in the county, at the request of any person interested therein, on payment or tender of his fees.

A County Superintendent of Education, appointed and removable by the State Superintendent of Education, who also, fixes the amount of his bond. He is paid \$75 per annum, and

* The Judge of Probate may appoint a special Coroner, when necessary.

† The last election for County Treasurers was in August, 1877; the next will be in August, 1880; after that, they will be elected every four years, as stated.

‡ The last election for Tax Assessors was in August, 1877; the next will be in August, 1880; after that, they will be elected every four years, as stated.

§ The last election for Tax Collectors was in August, 1877; the next will be in August, 1880; after that, they will be elected every four years, as stated.

one per cent. upon the amount of all the educational fund disbursed by him, and has supervision of public school matters in his county.*

POLITICAL DIVISIONS.

The political divisions of the State are Counties, Senatorial Districts, and Congressional Districts.

The Counties, of which, at present, there are sixty-six, are entitled to representation in the Lower House of the General Assembly, according to the number of inhabitants in them, respectively; but each is entitled to at least one Representative. The present apportionment is prescribed by Art. IX, sec. 6, of the State Constitution.† The next will be according to the Federal census of 1880; and the next according to the census ten years thereafter; and so on. Representatives receive four dollars a day during the time the General Assembly is in session;‡ and mileage, at the rate of ten cents a mile going to and returning from the seat of government.§

The Senatorial Districts. The State, at present, is divided into thirty-three Senatorial Districts, numbered from one to thirty-three, consecutively;|| and each of these is entitled to one Senator, and no more, in the State Senate. Until after the decennial census of the United States in 1880, the Senatorial Districts will be in accordance with Art. IX, sec. 7, of the Constitution of Alabama.** After that time the General Assembly is required to fix the number of Senators and re-adjust the Districts, so as to make the latter as nearly equal in point of population as possible. Senators are allowed the same pay and mileage as Representatives.††

* In most of the counties, there are subordinate officials, such as the County Physician, Keeper of the County Poorhouse, etc; but these offices are the creations of the Courts of County Commissioners, which fill them, prescribe the tenure of office, compensation, etc.

† See *ante*, Constitution.

‡ The sessions of the General Assembly are limited to fifty days. See *ante*, Constitution, Art. IV, Sec. 5.

§ Representatives are chosen biennially, on the first Monday in August, by the qualified voters of the county.

|| For Senatorial Districts, see APPENDIX.

** See *ante* Constitution.

†† Although Senators hold their offices for four years, one-half of their number are, by a wise provision of the Constitution, chosen biennially, to preserve in that body a due proportion of experienced members. To accomplish this, the Constitution, Art. IV, sec. 9, prescribed that at the general election in 1876, Senators from the even numbered Districts should be elected for two years, and those from the odd numbered for four years.

The Congressional Districts. The State is divided, at present, into eight Congressional Districts,* in each of which there is chosen biennially on the first Tuesday after the first Monday in November, by the qualified voters of the District, one Representative to the Congress of the United States. These Representatives are commissioned by the Governor of the State, and are paid from the Treasury of the United States.† ‡

ELECTION LAWS.

Officers Elected by the People. The following officers in this State are elected by the qualified voters thereof: Governor, Secretary of State, State Treasurer, State Auditor, Attorney General, Superintendent of Education, Senators and Representatives of the General Assembly, Chief Justice and Associate Justices of the Supreme Court, Judges of the Circuit Courts, Chancellors, Judges of the Probate Courts, and Judges of other inferior courts in cases not otherwise provided for by law, Sheriffs, Coroners, and Clerks of the Circuit Court, Tax Assessors, Tax Collectors, County Treasurers, County Commissioners, Constables, Justices of the Peace, Representatives in Congress, and Electors for President and Vice President of the United States.§

Who May Vote. The following persons are qualified to vote for all officers elected by the people of this State: Every male citizen of the United States, and every male person of foreign birth, who has been naturalized, or who may have legally declared his intention of becoming a citizen of the United States before he offers to vote, and who is twenty-one years old, and has resided one year in the State, three months in the county, and thirty days in the ward or precinct. But no one may vote who has been convicted of treason, embezzlement of public funds, malfeasance in office, larceny, bribery, or other crime punishable by imprisonment in the penitentiary, or who is an idiot or lunatic. Persons must vote in the ward or precinct of their actual residence.

* For Congressional Districts, see APPENDIX.

† Alabama has two Senators in the Federal Congress, elected by the General Assembly on joint ballot, and commissioned by the Governor, but paid from the Treasury of the United States.

‡ In the Electoral College for President and Vice-President of the United States, Alabama has ten votes, and the electors are voted for by the qualified voters of the State, every four years on the first Tuesday after the first Monday in November. The next election will be in 1880.

§ For the times when these officials are, respectively, elected, see each head, under STATE, or COUNTY ORGANIZATION, or POLITICAL DIVISIONS, *ante*.

Registration of Voters. The law of this State requires as a preliminary to voting, and in order to preserve the purity of the ballot, that every voter shall, before he offers to vote, be properly registered, and a certificate to that effect given him; and to that end, there is a Registrar appointed in each county, who has one assistant in each precinct and ward. It is the duty of these officials to make this registration, and issue these certificates.

LAWS RELATING TO HOLDING OFFICE.

Who may Hold Office. By the laws of this State, the persons ineligible to and disqualified from holding office in Alabama, are: Those who are not male persons of the age of twenty-one years, those who have not been inhabitants of the State, county, district, or circuit, the period required by the Constitution and the laws of the State; those who have been convicted of treason, embezzlement of public funds, malfeasance in office, larceny, bribery, or other crime punishable by imprisonment in the penitentiary; and those who are idiots or insane; those who have in this State, or in any of the United States, given, accepted, or knowingly carried a challenge to fight with deadly weapons; those against whom there is a judgment unpaid for any money received by them in any official capacity, due to the United States, this State, or any county thereof; soldiers, seamen, or marines, in the regular army, or navy of the United States; and those holding offices of profit under the United States, except postmasters whose annual salary does not exceed two hundred dollars.* With these exceptions, all persons resident in this State, born in the United States, or naturalized, or who have legally declared their intention to become citizens of the United States, may hold office in this State.

Oath of Office. The only oath required of a person elected to office in this State is, that he will faithfully support the Constitution of the United States, and that of Alabama; that he will faithfully discharge the duties of his office; and that he has never been, nor during his continuance in office, will be concerned in a duel with a citizen of this State.

* No person can hold two offices of profit at one and the same time under this State, except Justices of the Peace, Constables, Notaries Public and Commissioners of Deeds.

Part Third.

Synopsis of the Tax Laws, and other Important Statutes of Alabama.

TAX LAWS OF ALABAMA.*

The Auditor of the State is the head of its financial department; has supervision of its fiscal affairs; and prescribes the forms employed in assessing and collecting its revenue. The Tax officers of the State, are the Tax Assessors and Tax Collectors—every county having one of each.† The Tax Year begins January 1st. Assessments commence May 1st, and must be completed July 1st, with leave to the Assessors, until September 1st, to file supplemental returns of property escaping assessment prior to July 1st. The Assessor is required to give due notice of the times and places within the county at which he will attend to receive returns of taxable property—and those liable must be present; but non-residents, females, and infirm persons may send sworn lists. If any person liable to taxation fails to attend, or, being excused from attending, fails to send a sworn list of his taxable property, the Assessor must make demand on him for a return in person if he can be found, otherwise by leaving a written notice at his place of residence; and for each such demand or notice, the Assessor is entitled to a fee of fifty cents, to be entered on the delinquent's tax list, and collected by the Tax Collector. If the party still fails to make a return, and does not do so prior to June 1st, the Assessor must, himself, make the return from the best *data* within his reach. When the assessments are completed, the Assessor's book is deposited with the Probate Judge of the county, in whose office it remains, open for inspection. Errors in assessments are corrected on appeal, by the Court of County Commissioners, at its August term, at which time, this court, also, fixes the rate of taxation to be levied for county purposes,

* By *Tax Laws*, are here intended the general laws of the State, governing the assessment and collection of the State and county revenue; and not those of any particular city, town, or district.

† The Probate Judges collect the *License* taxes.

not to exceed one-half of one per cent. on the value of the taxable property of the county, as assessed for State revenue.* State and county taxes are due October 1st, and delinquent, December 31st. The Tax Collector is required to give due notice of the times and places, within the county, at which he will attend to receive payment, and tax payers must meet him. These appointments must be completed prior to December 31st. After that time, the Collector must make demand on each delinquent for payment—in person if he can be found, otherwise by written notice left at his place of residence, and for each such demand or notice the Collector is entitled to a fee of fifty cents.

Tax returns must be sworn to, and false swearing in this regard is perjury, and punishable as such.

PERSONS EXEMPT FROM TAXATION.

1. Females; males under 21 or over 45 years of age; deaf mutes; insane persons; blind persons; and permanently disabled persons, whose taxable property does not exceed \$500; are exempt from Poll Tax.

2. Individual shareholders are exempt from taxation on their shares of capital stock, in any company or corporation required to list its property for taxation.

PROPERTY EXEMPT FROM TAXATION

1. The property of deaf mutes, insane and blind persons, to the value of \$1,000.

2. The property of the United States.

3. The property of this State, its counties, and other municipal corporations.

4. Bonds of the United States and this State.

5. Cemeteries.

6. Lots in incorporated cities or towns, or within one mile of the same, to the extent of one acre, and lots one mile or more distant from such cities or towns, to the extent of five acres, with the buildings thereon; when used exclusively for religious worship, for schools, or for purposes purely charitable.

7. The property of public Agricultural or Horticultural associations of this State, to the value of \$25,000, each.

8. The property of literary and scientific institutions, and literary societies, used in the regular business of such institutions.

* See *ante*, Constitution, Art. XI. sec. 5, *Proviso*, for exceptions.

9. The Libraries of Ministers of the Gospel; and all libraries except professional libraries; and all religious books kept for sale by ministers and colporteurs.

10. Family portraits.

11. The following property, to be selected by the head of each family, viz: Household and kitchen furniture to the value of \$150; one yoke of oxen; one cart or wagon; two cows and calves; twenty head of stock hogs; ten head of sheep; all poultry; all corn, provisions, and supplies on hand for the current year for the use of the family and the making of a crop; all wearing apparel; all looms and spinning wheels kept for use in the family; farming tools to the value of \$25; tools and implements of mechanics to the value of \$25.

PERSONS SUBJECT TO TAXATION.

Unless included under the head of PERSONS EXEMPT, every inhabitant of this State, is subject to an annual poll-tax of one dollar and fifty cents; applied exclusively in aid of the public school fund in the county, in which it is levied and collected.

PROPERTY SUBJECT TO TAXATION.

Unless included under the head of PROPERTY EXEMPT, the following is subject to an *ad valorem* tax of seven-tenths of one per cent., for State purposes:* †

1. Lands, with the improvements thereon.
2. Wharves and wharf boats, toll bridges and ferries, turnpikes, and passes, channels, or canals, where tolls are charged.
3. Street railroads.
4. Printing presses and materials.
5. Steamboats, vessels, and other water craft plying in the navigable waters of this State.
6. Stocks of goods, wares, and merchandise—to be assessed upon the largest amount on hand at any one time during the preceeding tax year; and including merchandise kept on plantations for sale, or to be dealt out to laborers for profit.
7. Household furniture; libraries; jewelry; plate and silverware; ornaments and articles of taste; pianos and other musical instruments; paintings; clocks, and gold and silver watches, and

* The question of a reduction of this rate is now being agitated, and it is more than probable that it will be reduced at the 1878 session of the General Assembly, as it seems to be the general impression that such reduction can be made, and the State still enabled to meet its obligations.

† See Constitution, Art. XI, for restrictions on the power to tax.

gold safety chains ; wagons, and other vehicles ; mechanical tools ; farming implements ; dirks, bowie-knives, sword-canes, pistols, and guns ; cattle, horses, mules, studs, jacks and jennets, and race horses, hogs, sheep, and goats.

8. Money hoarded, or kept on deposit subject to order, except funds held subject to draft in the prosecution of a regular exchange business.

9. Money loaned, and solvent credits, less actual indebtedness of taxpayer.

10. Money employed in buying and trading in paper, or in regular exchange business, or invested in paper, whether by individuals or corporations, unless such money is otherwise taxed as capital.

11. The capital stock of all companies incorporated under any law of this State, except such portion as is invested in property and otherwise taxed as property.

12. Bonds, except those of the United States and this State, and such other as are not, by law, taxable.

13. The bed, track, and all other property of railroads.

14. All other property, real and personal, not otherwise specified herein.

ON THE FOLLOWING, the rate for State purposes, is, also, seven-tenths of one per cent :

1. On all salaries, gains, incomes, and profits for the preceding tax year.

2. Gross receipts of telegraph and sleeping-car companies.

ON THE FOLLOWING, the rate for State purposes, is three-fourths of one per cent :

1. On all commission sales, after deducting expenses of business.

2. On all commissions earned by insurance agents.

3. On receipts of cotton pickeries, after deducting expenses of carrying on business.

4. On amount received for storage on cotton or other merchandise, after deducting expenses of business.

5. On income of gas-works, water works, and public mills and gins, after deducting expenses of business.

6. On dividends earned, but not divided, by any incorporated company, and not otherwise assessed.

7. On shares of the stock of National and savings banks, to be paid by the association, and to be in lieu of all other taxes, State, county, or city.

ON THE FOLLOWING, the rate for State purposes, is one per cent:

1. On gross amount of premiums of Home and Foreign Insurance Companies, after deducting expenditures, losses paid, and return premiums.

ON THE FOLLOWING, the rate for State purposes is one-fourth of one per cent:

1. On all auction sales, to be paid by auctioneer; but on sales by the cargo, the rate is one-eighth of one per cent.

PROCEEDINGS TO ENFORCE THE COLLECTION OF TAXES.

After January 1st, it becomes the duty of the Collector to enforce payment of taxes by levy and sale of property, and no property is exempt from sale for taxes. The Collector may also resort to process of garnishment. Personal property seized for taxes, may be sold on ten days notice; and no redemption of personal property is allowed. If, after diligent search, the Collector fails to find sufficient personalty to satisfy the tax and charges, he may then, and not until then, resort to the real property of the taxpayer.

By March 1st, the Tax Collector is required to file in the office of his Probate Judge, a certified list of all tax delinquents in his county, against whom taxes have been assessed, when a portion or all of such taxes is on land or lots; together with a statement of the amount of unpaid taxes and charges due by each delinquent; and a list of the lands and lots assessed to him. The list must, also, contain lands and lots assessed to "owner unknown," with the taxes and charges due thereon.

The Collector must then give notice by legal publication in some newspaper in his county, or, when there is none, by proper posting, that he will, at the next (April) term of the Probate Court, apply for a decree for the sale of such lands and lots in satisfaction of delinquent taxes, unless paid before that time; and that he will, beginning May 1, thereafter, sell such as are decreed to be sold, at public auction, at the court house door. The Probate Judge, after the filing of this list, must issue a written notice to each delinquent known and residing in the county, informing him of the filing of the list and application to the Court for decree.

Any delinquent may appear at the hearing and contest the application and relieve himself from liability:—

1. By showing that the assessment was erroneous; and paying so much thereof as the court adjudges.

2. By paying the full amount of the taxes assessed against him for the preceeding tax year, and all costs.

3. By showing that he paid the taxes assessed against him for the preceding tax year, before the filing of the complaint.

4. By showing that he had in his possession in the county a sufficient amount of visible personal property, out of which the taxes might have been collected, or that, upon demand for such personal property, he delivered to the Tax Collector a sufficient amount thereof for the satisfaction of his taxes; in either event, upon payment of the amount of his unpaid taxes, he must be discharged, without costs.

If delinquent fails to discharge himself, the Probate Court renders a decree for the sale of his lands or lots; but delinquent is allowed an appeal to the Circuit Court, upon executing an appeal bond.

When the court has rendered its decree, the Collector gives legal notice, by newspaper publication, or posting, that he will begin the sale of the lands and lots decreed against, on the first Monday in May next thereafter, and continue the sale from day to day, until all are disposed of.

CERTIFICATES OF PURCHASE; REDEMPTION OF; AND DEEDS TO LANDS, SOLD FOR TAXES.

On the purchase of land, at tax sale, the Tax Collector is required to give the purchaser a proper certificate of purchase; which certificate is assignable by endorsement. The State, through its Tax Collector, buys in land, which has failed to sell for enough to pay taxes and charges, and he makes and delivers to the State Auditor, a certificate of purchase, for the State. Land bought in by the State is not assessed again until redeemed. Land sold for taxes may be redeemed at any time within two years from date of sale, and as well from the State as individuals, by refunding to the purchaser the purchase money paid, and paying him 12 per cent. penalty thereon, and legal interest, and paying all unpaid taxes on the land which have subsequently accrued. If not redeemed, at the expiration of the two years, the Probate Judge must make absolute deed to purchaser.

BUSINESS LICENSES REQUIRED IN ALABAMA.*

Licenses must be taken out from the Probate Judge, and

*The licenses alluded to here, are State and County licenses. Cities and other municipal corporations may, also, impose licenses, which are regulated by their own ordinances.

those doing business without are liable to indictment and punishment. Licenses are not transferable, and entitle the holder to do business only at the place specified therein. All licenses expire December 31st, and are for one year, unless the business is commenced after July 1st, when the license is for half year; but for a retail liquor license taken out after January 1st, the price is the same as the license for a whole year.

THE PRICES OF LICENSES. *

1. For each public race track, at or within five miles of any city or town of less than five thousand inhabitants—\$100.
2. For such track, at or within five miles of any city or town of more than five thousand inhabitants—\$200.
3. For retailers† of spirituous, vinous, or malt ‡ liquors, on any steamboat or water craft—\$100. §
4. For retailers of same in any city, town, or village, of less than one thousand inhabitants, or any other place—\$50.
5. For retailers of same in any city, town, or village, of more than one thousand, and less than five thousand inhabitants—\$100.
6. For retailers of same in any city of over five thousand inhabitants—\$125.|| **
7. For wholesale dealers in spiritous, vinous, or malt liquors in any place of less than one thousand inhabitants—\$30.
8. For same dealers in place of over one thousand and under three thousand inhabitants—\$50.
9. For same dealers in city of over three thousand inhabitants—\$75.††

* The Courts of County Commissioners are authorized to add to these prices 50 per cent. for county purposes.

† A retailer is one who sells less than a quart; or permits what he sells to be drunk by the glass or single drink in or about his place of business.

‡ Dealers in lager beer exclusively, whether on boats or elsewhere, pay one-fourth of retail liquor license.

§ This license may be taken out in any county through which the boat runs, which entitles to retail without further license. Boat must keep license posted up in plain sight of bar.

|| The Code, Sec. 494, prescribes the following exception to this rate, viz: "Each retailer of spirituous, vinous, or malt liquors, outside of the following described limits in the city of Mobile, to-wit: Right bank of Mobile river on the east, Church street on the south, Joachim street on the west, St. Michael street on the north, including those settled on the north side of St. Michael street, on the west side of Joachim and on the south side of Church street, shall be charged a State license of \$75."

** Retailers are not required to take out wholesale license.

†† Wholesale dealers in Mobile, living outside the limits prescribed above, are charged \$50.

Wholesale dealers are those who sell by the quart and upwards, and do not permit it to be drunk on or about their premises,

10. For compounders and rectifiers of spirituous, or vinous, liquors—\$100. *
11. For distillers of spiritous liquors—\$50. †
12. For brewers—\$15.
13. For pawnbrokers—\$50.
14. For peddlers in a wagon—\$40. ‡
15. For peddlers on a horse—\$20.
16. For peddlers on foot—\$10.
17. For bowling alleys where fees are charged, each alley, —\$25.
18. For billiard tables, where fees are charged, each table, —\$25. §
19. For pool tables, each—\$100.
20. For each bagatelle or Jenny Lind table, or other table or device from which profit is derived to the keeper—\$25.
21. For theatres in towns or cities of less than two thousand inhabitants—\$25.
22. For theatres in towns or cities of more than two thousand inhabitants—\$50.
23. For dealers in pistols, bowie-knives, and dirk knives, whether the principal stock in trade or not—\$50.
24. For peddlers of medicines or other articles of like character, for each county in which they peddle—\$25.
25. For each sewing machine company, selling sewing machines, by itself or its agents, as a State tax—\$100. ||
26. For each circus exhibition in towns or cities of more than five thousand inhabitants—\$100.
27. For each circus exhibition in all other places—\$50.
28. For each exhibition of a menagerie or museum—\$20.
29. For each exhibition of a side show, accompanying a circus, menagerie or museum—\$10.
30. For concerts, musical entertainments, and public lectures, where charges are made for admission, and not given for charitable purposes, each entertainment—\$5.

* Wholesale dealers who pay, as such, a license tax equal to or larger than this, are exempt from this tax.

† Does not apply to distillation of fruit.

‡ A peddler's license entitles him to peddle only in county where taken out, unless he is a disabled citizen of this State, or is peddling the productions or manufactures of Alabama.

§ The same amount is required to be paid on every table on the premises where a bar or drinking saloon is kept, whether its use is charged for or not.

|| The payment of this tax to the State, evidenced by the receipt of any Probate Judge, exempts the company from payment of this State tax in any other county; but in each county in which the company has an agent, a license of twenty dollars must be paid for county purposes.

31. For each shooting gallery—\$25.
32. For each chicken or cock pit—\$25.

INN, HOTEL, AND BOARDING HOUSE, LICENSES. * †

1. Inns or hotels in towns of twenty-five hundred inhabitants, or less—\$20.
2. Inns or hotels in towns of more than twenty-five hundred and less than five thousand inhabitants—\$30.
3. Inns or hotels in towns of between five thousand and ten thousand inhabitants—\$50.
4. Inns or hotels in towns of more than ten thousand inhabitants—\$75. ‡

IMPORTANT STATUTES OF ALABAMA.

MISCELLANEOUS CODE PROVISIONS.

“Oath” includes affirmation.

“Writing” includes printing on paper.


“Month” means calendar month, and “Year” calendar year, unless otherwise expressed.

“Signature,” or “Subscription,” includes mark, party’s name being written near, and attested by one witness, thus:

Richard ^{his}
X Roe: John Doe, witness. §
mark.

Words giving joint authority to three or more, give such authority to a majority, unless otherwise declared.

Writings importing on their face to be under seal, are to be taken as sealed, and have the same effect as if the seals of the parties were affixed.

A simple scroll  made with pen or pencil, and with or without the word *seal*, written therein, is sufficient sealing.

Time is computed by excluding first, and including last day. When last day falls on Sunday, it, too, must be excluded.

The standard of measure, length, surface, weight, and capacity in force in this State, is the Congressional.

* This tax is divided between the State and county.

† Inn or hotel keepers, who pay license, are exempt from all other income tax on their business as such.

‡ Houses or places for the entertainment of boarders, lodgers, transient persons, and other guests, may be kept anywhere in the State, without the payment of a license tax, but must pay a State tax of three-fourths of one per cent. on the net income of such business, and to the county a tax of one-half of one per cent. on same. Tax to be assessed on business of preceeding year. But not less than \$10 to the State and \$5 to the county must be paid.

§ The name of the witness may be written anywhere near. If the mark is intended as a signature to a conveyance of land, there must be two attesting witnesses.

BUSINESS LAWS.

The legal rate of interest in this state, is 8 per cent.

Inland Bills of Exchange, are bills drawn and payable in this State.

Foreign Bills of Exchange, are bills drawn in this State, payable elsewhere.

Bills of exchange and promissory notes, payable in money at a bank or private banking house, or a certain place of payment therein designated, are governed by the commercial law.

All other paper payable in money at a bank or private banking house, is governed by the commercial law as to days of grace, protest, and notice.

No other paper is entitled to grace.

Paper due on legal holiday, must be paid the day before, and if that is Sunday, then on Saturday.

Acceptance of bills must be in writing, signed by acceptor or his agent.

Holder may require acceptance to be written on bill; and, on refusal, protest for non-acceptance.

Refusal to return a bill within 24 hours, is equivalent to an acceptance.

Sets-off against all but commercial paper allowed, until notice of assignment or transfer. No set-off against commercial paper not over-due.

An unconditional promise in writing before a bill is drawn, to accept the same, valid as an acceptance.

Damages on protested bills are 5 per cent on amount drawn for, and costs of protest; with interest at 8 per cent. on the aggregate sum of principal and damages from the time the former was payable.

If the protest is for non-acceptance, the damages carry interest from the demand of acceptance.

When the bill is payable in our currency, damages cover exchange. When the bill is payable in foreign currency, exchange must be added.

VOID CONTRACTS.

Contracts founded, in whole or in part, on a gambling consideration; and money, or other valuable, paid on such may be recovered.

Contracts made on Sunday; unless for the advancement of religion, or in the execution, or for the performance of some work of charity, or in case of necessity.

All instruments made to hinder, delay, or defraud creditors.

CONTRACTS REQUIRED TO BE IN WRITING.

In the following cases every agreement is void, unless reduced to writing, or some memorandum, expressing the consideration, is made thereof, and signed by the party to be charged or his agent having written authority :

Every agreement which, by its terms, is not to be performed within one year from the making thereof.

Every special promise, by an executor or administrator, to answer damages out of his own estate.

Every special promise to answer for the debt, default, or mis-carriage of another.

Every agreement, promise, or undertaking, in consideration of marriage, except mutual promises to marry.

Every contract for the sale of lands, tenements, or hereditaments, or of any interest therein, except leases for a term not longer than one year; unless the purchase money, or a portion thereof, is paid, and the purchaser put in possession.

Every representation of another's character, conduct, ability, trade, or dealings, to be actionable, must be in writing.

THE LAW OF CONVEYANCES.*

Every person twenty-one years of age, and not under a legal incapacity,† may alien his land, or any interest therein, immediate or future, certain or contingent, by an instrument in writing or last will.

Conveyances for such alienation must be written or printed on parchment or paper, and signed at the foot by the contracting party or his agent having written authority. If he is unable to write, his name must be signed for him, with the words "his mark" written over or against the same.‡ The execution of such conveyance must be attested by one, or where the party cannot write, by two witnesses, who are able to write.

A seal is not necessary to convey the legal title to land, to enable the grantee to sue at law, if such was the intention of the grantor, to be collected from the whole instrument.

Acknowledgement dispenses with witness or witnesses. §

A conveyance executed, and attested, or acknowledged, as

* Mortgages are embraced in the term Conveyance, and the same regulations are applicable to them, as to absolute deeds.

† The principal legal incapacities are idiocy and insanity.

‡ See *ante*, page 35.

§ To *acknowledge* a conveyance, is for the grantor to admit its voluntary execution, before some Judge, Clerk, Justice of the Peace, or Notary, who makes his certificate on the conveyance, to that effect.

above, is sufficient to pass a valid title as against the grantor, his heirs, and those not *bona fide* purchasers without notice, and for value. To make the title effective against all persons, the conveyance must, within a specified time,* be recorded in the office of the Probate Judge of the county where the land lies.

Conveyances to be admitted to record on proof, must in all cases be attested by two witnesses.† Conveyances proven or acknowledged according to law, and recorded within twelve months, are receivable in evidence without further proof; and if lost or destroyed, or out of the party's power to produce, certified transcripts may be received.

No writing is necessary to the conveyance of personal property; but verbal gifts of such are inoperative until possession passes.

Conveyances by a married woman of any interest in real property, stocks in incorporated companies, or shares in manufacturing companies, to be valid at all, must be attested by two witnesses, or acknowledged.

If a mortgage of personal property be reduced to writing, and recorded in the county of the mortgagor, and that where the property is, the record operates as constructive notice; but mortgages of personal property are valid without writing.

Attornment of tenant is dispensed with.

Conveyances of land are construed as conveyances of the fee, unless otherwise limited.

No lease is valid for a longer time than twenty years.

Survivorship among joint tenants is abolished, unless plainly intended.

Livery of seisin is dispensed with.

A power of sale in a mortgage is part of the security, and follows the debt.

A mortgagee receiving satisfaction, must enter same on record, if the mortgage has been recorded, under a penalty of \$200.

THE LAW OF DOWER.

The wife is entitled to dower in the following real estate of her husband:

Lands of which he was seised in fee during the marriage.

* See Code of Alabama (1876), Part 2, Title III, Conveyances.

† To *prove* a conveyance, is for one of the attesting witnesses to make affidavit before an officer authorized to take acknowledgements, that the grantor executed the same in the presence of affiant and the other attesting witness, on the day it bears date; that affiant attested the same in the presence of the grantor and the other witness; and that the other witness did so in affiant's presence. Whereupon, the officer makes his certificate to that effect, on the conveyance, and it is ready for recording. Conveyances are admitted to record either upon proof, or acknowledgement.

Lands of which another was seised in fee to his use.

Lands to which, at the time of his death he had a perfect equity, having paid all the purchase money.

If the husband's estate is solvent, and he leaves no lineal descendants, she is entitled to dower in one-half of such lands; if he leaves no lineal descendants, and his estate is insolvent, in one-third of such lands; if he leaves lineal descendants, in one-third of such lands, whether his estate is solvent or insolvent.

A wife can relinquish dower only by joining with her husband in the conveyance or mortgage, in the presence of two attesting witnesses;* or by a subsequent release in writing, attested by two witnesses, or properly acknowledged.

Married women may release dower whether 21 years of age, or not.

A married women joining in her husband's conveyance, is not bound individually or as to her separate estate, by his covenant of warranty; and such act has the effect only of relinquishing her dower, unless she specially covenants to bind her separate estate.

Wife retains dwelling house and plantation, free of rent, until dower is assigned; and dwelling house must be given her as part of her dower, when equitable. A married woman is not entitled to dower, if her separate estate is equal to or greater in value than her dower interest.

THE LAW OF DESCENTS, DISTRIBUTIONS, AND WILLS.

The descent of the real property, and distribution of the personal property, of intestates, is equitably regulated by statute.† But wills of both are allowed, which must be in writing, signed by the testator or some one in his presence and by his direction, and attested by at least two witnesses, who must subscribe their names as such. Nuncupative wills of personalty are allowed in certain cases of emergency and under certain restrictions, when the value of the property does not exceed \$500. ‡

Any person eighteen years old, may make a will of personalty; but must be twenty-one to will realty.

A married woman may will her separate estate—personalty if eighteen; lands, if twenty-one.

THE LAW OF THE WIFE'S SEPARATE ESTATE.

All property of the wife, held by her previous to the marriage

* Proper acknowledgement by the wife, dispenses with the witnesses.

† See Code of Alabama (1876), Part 2, Title IV, Estates of Decedents.

‡ See Code of Alabama (1876), ss. 2298-2302.

or coming to her after, is her separate estate, and not liable for her husband's debts; but under certain circumstances, carefully pointed out, it may be subjected for the support of the family, and the tuition of her children.*

The husband is trustee of the wife's separate estate, and may take the income to his own use, without accountability to any one; but such income is not liable for his debts.

The wife's separate estate may be sold by the joint conveyance, in writing, of herself and husband, attested by two witnesses, or properly acknowledged; and the proceeds continue her separate estate.

The husband is not liable for the debts of his wife contracted before marriage, and for these, she may be sued alone, and her separate estate subjected.

The husband of a woman having a separate estate and dying intestate, is entitled to one-half of her personalty, absolutely, and to the use of her realty during his life.

THE LAW OF ALIENAGE, AS AFFECTING PROPERTY RIGHTS.

An alien, resident or non-resident, may take, hold, inherit, convey, and will property in this State, same as a native.

Alien devisees, or next of kin, take or inherit to the exclusion of the State and more remote native or naturalized heirs.

REDEMPTION OF LANDS.

Real property sold under execution, decree, mortgage, or deed of trust, may be redeemed within two years, under certain restrictions and penalty. †

PLEADINGS AND CIVIL ACTIONS.

All pleadings are required to be short and simple, and no objection allowed for want of form.

The Code prescribes simple forms of pleading to be used in many cases.

Civil actions are begun by summons and complaint.

RULES OF EVIDENCE, COSTS, AND APPEALS.

Evidence in Chancery cases is taken by written depositions; in nearly all other cases, it is required to be given orally in open court.

* See Code of Alabama, (1876), ss. 2711-2712.

† See Code of Ala., (1876), Part 2, Title VII, ch. 4.

There is no exclusion by reason of interest; and a party may be examined on written interrogatories by his adversary.

Non-residents, and corporations are required to give security for costs.

Appeals are allowed in nearly every case.

THE HOMESTEAD, AND OTHER EXEMPTION LAWS OF ALABAMA.*

The following property is exempt in this State from forced sale for payment of debts:

During Owner's Lifetime—Personal property to the value of \$1,000.

The country homestead not exceeding 160 acres, nor \$2,000 in value; or, in lieu thereof, the dwelling house and lot in a city, town, or village, not exceeding \$2,000 in value. If the same cannot be allotted, then \$2,000 of the value thereof.

Family burial lots and church pews.

Necessary wearing apparel for himself and family.

Family portraits, and books used in the family.

From Garnishment, wages, salaries, etc., to the amount of \$25 a month.

After Owner's Death, if there be **Widow or Minor Child**—The homestead as above, during the life of widow, or minority of child, whichever terminates last.

The wearing apparel of deceased, and family.

All yarn and cloth on hand intended for home use.

Books in use in the family, and family portraits and miniatures.

Sufficient grain, stores, and groceries, on hand, to support the family for twelve months.

Such bedding, and household and kitchen furniture as may be necessary for the family use.

HOW EXEMPTIONS ARE WAIVED.

Exemptions of personalty may be waived by a separate instrument in writing, or by including the waiver in the bill of exchange, promissory note or contract; but a waiver relating to realty, must be on a separate instrument, signed by both husband and wife, if the owner be a married man, and attested by one witness. If the waiver be of the homestead, it must be on a separate instrument and have the voluntary signature and assent of the wife, properly acknowledged and certified.

* See *ante*. Constitution, Art. X. See, also, on this subject, Code of Ala., (1876) Part 2, Title VI, ch. 1—PROPERTY EXEMPT.

LIENS ON THE HOMESTEAD.

• The liens of laborers, mechanics, and material men, for work on the homestead, or materials furnished, are in no way effected by the exemption laws.

CONVEYANCES OF, AND MORTGAGES ON, THE HOMESTEAD.

Provision is made by the laws of this State for conveyances of and mortgages on the homestead, and such are valid, if properly obtained.

IMMIGRANT'S CONTRACTS.

Contracts, for service, made out of this State or in a foreign country, for a period not exceeding two years, are as valid in this State as if made here; and are good although made by minors and married women; but the minor must be 16 years of age; and have the assent of his father, or other guardian, certified thereon, and a married woman must have a certificate of the assent of her husband. Such contracts must be in duplicate, the *original* in the immigrant's language, and the *duplicate* in English; and the latter must be recorded in the office of the Probate Judge of the employer's county, within forty days after the arrival of the immigrant, to have the benefit of the provisions mentioned under this head.

An immigrant, under such contract, has a preferred lien on the product of his labor to secure his wages; and if the labor yields no tangible product, may, on application to the Probate Judge, require personal security.

If he be discharged without good cause, he may recover his wages for the full term; but if he leaves without good cause, or fails to enter the service as he contracted to do, he is liable for double the amount of his wages for the unexpired term, and this liability is a lien on all his future wages, whenever and from whomsoever earned. These provisions apply as well to contracts made with immigrants, after their arrival in the United States, for a period of two years.

LIEN LAWS.

By the laws of Alabama, liens are declared in favor of mechanics, builders and employes, on the product of their labor; and material men have a lien for supplies furnished. Landlords have, also, a lien for rent of land and supplies; and so have farm and railroad employes for their labor.

BUSINESS CORPORATIONS, AND LIMITED PARTNERSHIPS.

There is a general law in this State, under which corporations,

for carrying on any manufacturing, mining, or industrial business, may be formed by simply filing with the proper Probate Judge, a written declaration, setting forth the necessary facts. If this general law is not sufficient, a special act of the General Assembly may be obtained. Mining and manufacturing corporations have power to build tramways, canals, and turnpikes, necessary to connect their works with railroads and other public highways, and to condemn the right of way on paying just compensation.

Every facility is likewise afforded to those who wish to form corporations for constructing macadamized, turnpike, plank and railroads; or who wish to establish telegraph, or steamship companies, or companies for carrying on a banking, fire or life insurance, or any other lawful business. Religious, educational, benevolent, social and literary, and burial societies may, also, be formed under this general law.

Stockholders are individually liable to the extent of their unpaid stock, only.

There is, also, a general law in this State, under which limited partnerships are readily formed.

Part Fourth.

The Free Public School System of Alabama; Its Normal Schools; Universities and Colleges.

THE FREE PUBLIC SCHOOLS OF ALABAMA.*

THE FEDERAL LEGISLATION ON THE SUBJECT.

March 2, 1819, Congress passed an act for the admission of Alabama into the Federal Union. What is, now, the *State* of Alabama, was then the *Territory* of Alabama. By the first subdivision of the sixth section of this act, Congress granted the section numbered sixteen in every township,† and when that section had been granted, sold, or disposed of, other lands equivalent thereto, and most contiguous, to the inhabitants of such township for the use of schools therein. In return for this grant, the State disclaimed all right and title to the waste or unappropriated lands within its borders, and declared that the same should remain at the sole and entire disposition of the United States. This was the germ of the **Free Public School System** afterwards inaugurated in Alabama.

March 2, 1827, Congress authorized the State to sell these lands, and invest the proceeds in some productive fund, the revenue from which was to be forever applied to the use of schools; but providing that each township should have the full benefit of its particular section, and that the proceeds of any given sixteenth section should be credited to the township embracing such section, and the revenue arising therefrom applied to the support of the schools in that township, exclusively. Under this

* Before being put in the hands of the printer, this article was submitted to Hon. L. F. Box, Superintendent of Education, for examination and revision. In a letter to the writer, returning the manuscript, Mr. Box says:

"The article is well written, and for accuracy and comprehensiveness as a summary of our Public School System, could hardly be improved."

† By an act of Congress, passed May 18, 1796, all the public lands of the United States are required to be surveyed first into tracts called *townships*, in extent six miles square. The subdivisions of a township are called *sections*, each a mile square and containing 640 acres; these are sub-divided into *quarter sections*, and from that into lots of 40 acres each. A township, therefore, comprises 36 sections, or 23,040 acres.

authority, the lands or the larger portion of them, were sold and the proceeds became, in the hands of the State, the *nucleus* of its present **School Fund**.

July 4, 1836, Congress made another grant of lands to Alabama for the use of schools, equal to the thirty-sixth part of the lands within the State, ceded to the United States by the Chickasaw Indians. By the eighth section of an act passed September 4, 1841, Congress donated to the State 500,000 acres of land for internal improvements. Subsequently, by act of August 11, 1848, the State was authorized to apply these lands to the use of schools in those townships, in which the sixteenth sections, granted by the act of March 2, 1819, were comparatively valueless.

In 1836, there was a surplus of revenue in the United States Treasury, over and above what was necessary to meet the wants of the Federal Government; and Congress, by an act passed June 23d, 1836, declared that such surplus, in excess of \$5,000,000, should be apportioned among the different States, according to their representation in Congress, to be held until called for by the United States. The amount received by Alabama under this act, and which was by the Legislature appropriated as a part of the school fund, was \$669,086.80.

STATE CONSTITUTIONAL, AND LEGISLATIVE, SCHOOL PROVISIONS.

It has always been the policy of Alabama to foster education and promote learning among the masses, and the earliest Constitution of the State—that adopted in 1819, declared that schools and the means of education should forever be encouraged in this State. The first legislative enactment establishing a system of free public schools in Alabama, was passed February 17th, 1854. This act was supplemented by a very important act, passed February 14th, 1856. Prior to 1854, there was no such system, and the revenue accruing from the school fund was used to pay teachers of private schools, for the education of those entitled to the benefit of such revenue.

The present Constitution of the State requires the General Assembly to establish and maintain a system of public schools for all the children of the State, between the ages of seven and twenty-one years; but there must be separate schools for white and colored children. It prescribes, also, in general terms, from what and how these schools are to be supported; and prohibits the teaching, in them, of sectarian religious views. *

The public schools provided in accordance with these consti-

* See Constitution, Art. XIII, *ante*.

tutional requirements, are divided into four grades—**Primary, Intermediate, Grammar, and High** schools. The school year begins October 1st, and ends September 13th.* The school month is 20 days and the school day not less than 6 hours. There is no uniformity in text books used.

For the efficient administration of these schools, there are the following officers:

A Superintendent of Education for the State.

A County Superintendent of Education in each county.

Three Trustees of Public Schools in each township or other school district.

The **Superintendent of Education** is elected by the qualified voters of the State, every two years, on the first Monday in August; holds office for two years; gives bond in the sum of \$15,000; and is paid \$2,250 a year. He is required to keep his office in the Capitol building of the State; and is allowed a clerk at an annual salary of \$1,500. A vacancy in his office is filled by the Governor.

He is the chief school officer of the State, and has general supervision of its educational interests, and is required to devote his time to the care and improvement of the public schools, and the promotion of public education in the State. All the other school officials are, directly or indirectly, subject to his control; and he may remove any of them for delinquency in office. He appoints the County Superintendents of Education, and supervises their official acts. He is charged with the legal apportionment of the educational revenue, and required to see to its proper disbursement.

The **County Superintendents of Education** are the next in the scale of educational officers in the State. They are appointed and may be removed for delinquency by the Superintendent of Education; hold their office for two years; give bond in a sum to be fixed by the Superintendent of Education, not less than double the amount of school money that may come to their hands at any time; and are paid each seventy-five dollars† and one per cent. upon the amount of educational revenue legally disbursed by them; pay teachers annually between the 1st and 15th of October, upon certificates of the Board of Trustees, signed by the Clerk of the Board, taking their receipts in duplicate for amounts so paid; they are charged with the receipt, apportion-

* *Thirteenth* probably an error, and intended for *thirtieth*, but so written in the original.

† Evidently *per annum*, but not so expressed in the Code.

ment, and distribution of all the local school money accruing in their respective counties from whatsoever source, to be used in connection with that part of the general educational revenue apportioned by the Superintendent of Education to their counties. They may, for delinquency, remove district trustees, and fill their places. They examine into the condition of all school funds of their counties, including sixteenth section lands unsold; may bring suits for trespasses on school lands, and to recover such lands when in possession of other claimants. They must have offices at the county seats, where they must be present on the first Saturday of each month during the session of the public schools, to transact business. As soon as they receive the annual apportionment of the general educational revenue to their counties, they must notify the District Trustees of the amount which is coming to each race in their townships.

District Trustees. Every township in the State, and every fraction of a township which is divided by a State or county line or any other insuperable barrier, such as a river, creek, or mountain, is made a separate school district, under a board of three Trustees, called **The Board of Township Trustees**. Every incorporated city or town of three or more thousand inhabitants, is, also, made a school district, under the supervision of a **Board of Trustees**. These Trustees are elected by the people of their respective districts; the times, places, and mode of holding elections for whom being fully pointed out in the Code of Alabama, (1876) page 375. They are required to take an oath faithfully to discharge their duties, and may be removed by the County Superintendent of Education for delinquency in office, and by the Superintendent of Education for failure to furnish reports, or such other information as he may require. They give no bond, except when they are about to sell or lease school lands, and then the amount is fixed by the County Superintendent.

They have immediate supervision of the public schools in their respective districts, and have power to establish therein as many schools for either race as the public necessity requires. No one but a freeholder or householder, resident in the county, is eligible as District Trustee. The Board of each District meets annually, on the second Monday in January, for the transaction of business. One of its members acts as Clerk to the Board, and presides over its meetings and records its proceedings. Two members constitute a quorum for the transaction of business, but one may adjourn from day to day; and when there is only one Trustee in office he has full power to act. The Board employs teachers in

the township; draws warrants for their payment on the County Superintendent; and may remove them. It makes rules for the government of the schools of its Districts; and must visit, by one or more of its members, every school in the same at least once a year. Every second year, the Board is required to make an enumeration of the school children in its District and report number to the County Superintendent. These District Trustees receive no remuneration, but are exempt from road and jury duty.

The School Fund,* from the annual revenue of which, the public schools of the State are supported, consists of:

The principal of all funds arising from lands granted to Alabama, by Congress, for educational purposes, and which have been disposed of by the State, amounting to \$1,747,165.50. †

All lands or other property given by individuals or appropriated by the State for educational purposes.

The proceeds of all escheated estates.

The annual poll tax of one dollar and fifty cents. ‡

The sixteenth section trust fund, amounting to \$97,091.33. §

The surplus revenue fund, amounting to \$669,086.80. ||

The Public School Revenue. The following sums are required to be annually appropriated for the maintenance of the public schools in Alabama:

Six per cent. interest on the principal mentioned in first sub-division of **School Fund**, above; amounting to the yearly sum of \$104,829.93.

Six per cent. interest on the trust fund mentioned in fifth sub-division, same title; amounting to the yearly sum of \$5,825.47.

Four per cent. interest on the surplus revenue fund, mentioned in sixth sub-division, same title; amounting to the yearly sum of \$26,763.47.

The annual rents, incomes, profits, or proceeds of sales of all lands hereafter granted for the support of schools in this State.

The proceeds of all escheated estates.

* *Fund* is used to designate that which is *permanent*; *Revenue*, that which accrues *annually* from the fund.

† This embraces the sixteenth sections granted by act of March 2, 1819; and the grant of July 4, 1836.

‡ Poll tax is a school *fund*; but the amount annually arising from that source is school *revenue*.

§ For the nature of this grant, see *ante*. p. 45; and acts of Congress of September 4, 1841, and August 11, 1848.

|| See *ante*. p. 45; and act of Congress of June 23, 1836, for the nature of this fund.

The entire poll tax * of the State, amounting, in 1877, to the sum of \$116,000.

An annual appropriation of \$130,000, from the State Treasury, in addition to the foregoing. †

Method of Apportioning the Educational Revenue. ‡ The apportionment of the general educational revenue is according to an enumeration of the school population in the State made every two years; allowing so much to each child.

At the beginning of each school year, the State Auditor certifies to the Superintendent of Education what will be to the credit of the general educational fund for that year. The Superintendent then sets apart from such revenue what will be necessary to pay the expenses of his office and the Normal schools during the year; and apportions the balance among the different School Districts. He first gives to each District so much of the revenue as has been produced by the sale or other disposition of its sixteenth section or other land grant. After doing this, from what is left, he first makes those Districts which have little or no revenue from the foregoing source, equal to those which have more; and then equally apportions the remainder of the revenue among all the Districts according to their respective school population; and certifies to the State Auditor what he has done, who draws his warrants in favor of the proper parties, on the different Tax Collectors of the State, which are paid as the taxes are collected. §

Local Systems of Public Schools. In addition to the general system throughout the State, local systems of public schools have, by special acts of the General Assembly, been established in Dadeville, Huntsville, Birmingham, Eufaula, Marion, Opelika, Selma, Montgomery, Oxmoor, and the County of Mobile. These

* The poll tax is an annual tax of one dollar and fifty cents on nearly every male inhabitant of the State, between the ages of 21 and 45 years. Whatever accrues from this source in any given district constitutes a *local* school fund, and must be retained and applied, exclusively, to the support of schools in that district. What is collected from the whites to the use of white schools, and what is collected from the colored population to the use of colored schools.

† Each county in the State, except Mobile county, may, in addition to these appropriations, levy and collect, for the exclusive use of schools in that county, a special tax of not more than one-tenth of one per cent. in any one year, on the taxable property of the county.

‡ The poll tax, and the special tax (when imposed) of one-tenth of one per cent., constitute a *local* fund in each county where collected, and the amount accruing from these sources is paid over to the County Superintendent, without the intervention of either the State Auditor or Superintendent of Education, but must be reported to the latter.

§ When the amount of taxes collected in any one county is not sufficient to pay the Auditor's warrants on the Tax Collector, the Auditor draws his warrant on the State Treasurer for the deficiency.

local systems have been instituted for the convenience of the particular localities where they are in active operation, most of which embrace important cities; and constituting, each, a separate and distinct school district, are regulated by laws peculiar to themselves, which are explicitly set forth in the Code of Alabama; but they are supported, as the other public schools, out of the educational revenue of the State.

Miscellaneous School Information. Teachers of public schools, when required by the District Trustees must obtain a certificate of qualification from such authority as may be designated by such Trustees; must keep a register of actual daily attendance of pupils in their schools; and must make certified reports on or before the expiration of the scholastic year, of the number of pupils, designating them by name, in attendance during their schools.

Public examinations must be held in every school at least once a year. Honorable certificates are given to graduates.

According to the report of Hon. Leroy F. Box, Superintendent of Education, the number of School Districts in the State the present year (1877-78), is 1,700; number of schools taught, white 2,696, colored 1,404; number of teachers employed, white 2,722, colored 1,423; grades of schools taught, primary 1,590, intermediate, 1,370, grammar, 973, high, 167; school population, white, 214,279, colored, 155,168; number enrolled in schools, white, 86,485, colored, 54,745; average attendance in schools, white, 61,584, colored, 40,092.

It will thus be seen, that the Public School System of Alabama is as extensive and well supported as that of any State in the South; and amply sufficient for the proper education of the people. These schools are comparatively well attended; ably and conscientiously administered; and a source of pride and gratification to every true Alabamian.

NORMAL SCHOOLS.

At Florence, in Lauderdale county, there is a Normal School upon the most approved plan, for the education of white teachers, male and female, in the theory and practice of teaching; controlled by a board of directors, called "The Board of Directors of the State Normal School," with a President, Secretary, and Treasurer. The directors receive no compensation, and a vacancy in the board is filled by the remaining members. The act

of the Board of Education, * creating this institution, approved December 14, 1874, requires that not less than \$5,000 shall be annually appropriated, out of the general educational revenue, for its support. The board of directors elects the faculty, consisting of a President and complete corps of instructors; and also, prescribes the rules and regulations of the school. Applicants for admission must be not less than fifteen years of age, and pass a satisfactory examination. The tuition is free, but the student must bind himself to teach at least two years in the public schools of the State; he may, however, release himself from this obligation, by paying tuition. A graduate from this institution can teach in any public school in the State, without further examination. During the year 1876-77, there were in its normal department, 48 students. The faculty is an efficient and laborious one, and composed of instructors who have devoted the greater portion of their manhood to the profession of teaching; and, although the school is of so recent origin, its good effects have already been felt on the educational interests of the State.

At Marion, in Perry county, there is a State Normal School for the education of colored teachers, in the theory and practice of teaching; and an University, connected therewith, for the education of colored students in the higher departments of learning. This institution was established by an act of the Board of Education, approved December 20, 1871, and is under the control of a board of directors, called, "The Board of Directors of the State Normal School and University for the Education of the Colored Race," with a President, Secretary, and Treasurer. A vacancy in the board is filled by the remaining members. The directors receive no compensation. The act, establishing the institution, requires that \$4,000 shall be annually appropriated out of the State educational revenue for its support. It has, also, private endowments to a considerable amount, which, in connection with the aid received from the State school revenue, is sufficient to support it upon the most approved plan. The board of directors elects the faculty, consisting of a President, and competent corps of instructors; and, also, prescribes the rules of the school. Applicants for admission must be at least 14 years of age, and pass a satisfactory examination. The tuition is free, but beneficiary must bind himself to teach at least two years in the

* Under the Constitution of 1868, a Board of Education, composed of two members from each Congressional District, exercised exclusive legislative authority over the Public School System of Alabama, and the State educational institutions. This Board was abolished by the Constitution of 1875, and its powers remitted to the General Assembly.

public schools of the State; he may, however, release himself from the obligation by paying tuition. The institution is in successful operation.

At Huntsville, in the northern portion of the State, there is, also, a **Normal School** for the professional education of colored teachers; controlled by a board of three commissioners, one of whom is chairman. This school was established December 20, 1871, and an annual appropriation of \$1,000, out of the State educational revenue, is required to be made, for its support. Pupils are admitted free of charge, but must bind themselves to teach two years in the public schools of the State. This institution is, also, in successful operation.

UNIVERSITIES, AND COLLEGES, OF ALABAMA.

The facilities of the State to furnish higher instruction to its youth, both male and female, are ample, as the following register of its leading educational institutions will show. These institutions are all in competent hands, with able faculties; are well patronized; and, in curriculum and efficient administration, unsurpassed by any in the South. Catalogues of all, with full information, may be had on application to their respective Presidents:

NAME.	LOCATION.	SEX.	DENOMINATION.	OPENED.	STUDENTS.*	PRESIDENT.
†University of Alabama.....	Tuscaloosa.	Male.....	Non.....	1831	179	J. Gorgas.
Southern University.....	Greensboro.	Male.....	Methodist	1858	121	L. M. Smith.
‡Agricultural and Mechanical College.....	Auburn.....	Male.....	Non.....	1872	238	I. T. Tichenor.
§Medical College of Alabama.....	Mobile.....	Male.....	Non.....	1859	55	W. H. Anderson.
Spring Hill College.....	Mobile.....	Male.....	Jesuit.....	1847	147	D. Beaudiquin.
Howard College.....	Marion.....	Male.....	Baptist	1843	124	J. T. Murfee.
Judson Institute.....	Marion.....	Female.....	Baptist	1839	116	L. R. Gwaltney.
Marion Female Seminary.....	Marion.....	Female.....	Non.....	1836	90	H. R. Raymond.
Tuscaloosa Female College.....	Tuscaloosa.	Female.....	Non.....	1859	102	Alonzo Hill.
Alabama Central College.....	Tuscaloosa.	Female.....	.....	.....	..	Jno. F. Lanneau.
Greensboro Female College.....	Greensboro.	Female.....	Non.....	1874	82	T. W. White.
Auburn Female College.....	Auburn.....	Female.....	Non.....	1877	106	H. Urquhart.
Alabama Conference Female College.....	Tuskegee ...	Female.....	Methodist.....	1856	93	John Massey.
Florence Synodical Female College.....	Florence.....	Female.....	Presbyterian.....	1855	72	J. D. Anderson.
Huntsville Female College.....	Huntsville.....	Female.....	Methodist	1855	82	G. W. F. Price.

* Session of 1877-78.

† ‡ § The University of Alabama, and the Agricultural and Mechanical College, being strictly STATE INSTITUTIONS, and the Medical College, at Mobile, *quasi* such, are treated of more in detail under that head, *post*.

Part Fifth.

*State Institutions of Alabama.**

THE UNIVERSITY OF ALABAMA.

By the act of Congress admitting the State of Alabama to the Union, passed March 2, 1819, seventy-two sections of the public land, within the State, were set apart "for the use of a seminary of learning." The proceeds arising from the sale of the land were to be vested in the Legislature of the State, and "appropriated solely to the use of such Seminary by the said Legislature."

In accordance with the provisions of this grant, an institution, styled the **University of Alabama**, was established by act of the General Assembly of Alabama, approved December 18, 1819, and incorporated by a supplementary act, approved December 18, 1820.

In 1828, a site for the location of the University was selected at Marr's Spring, one mile and a quarter east of the courthouse in Tuscaloosa. The erection of the buildings was forthwith begun, and the University was opened for the reception of students April 17, 1831. Rev. Alva Woods, D. D., was the first President. He was aided by a Professor of Mathematics and Natural Philosophy, a Professor of Ancient Languages, and a Professor of Chemistry and Natural Sciences. In 1834, the University buildings were completed, at a cost of more than \$100,000. These consisted of a spacious and beautiful Rotunda, formed, mainly, in model of that of the University of Virginia; of an edifice of two stories, called the Lyceum; of three large college halls for the use of students; and five residences for Professors.

The Rotunda was a circular edifice of three stories, seventy feet in diameter and seventy feet in height; surmounted with a dome, and surrounded by a lofty peristyle of the Ionic order. The principal story, or ground floor, was used for chapel service

* It was originally intended to accompany these sketches with appropriate engravings of the Institutions; but it was found that the expense of so doing would greatly increase the cost of this book, and tend to defeat its object, which is, to furnish a work for general dissemination, and within the means of all.

and academic celebrations. This apartment was probably the finest auditorium in the State. In the second story was the circular gallery of the auditory, supported by carved columns of the Corinthian order. The third story contained the Library of the University, consisting, at the time of its destruction, in 1865, of about 25,000 volumes. Of the three college halls, all of three stories, two, the Washington College and the Jefferson, were sixty feet long and thirty feet wide, each divided into two halls with twelve commodious apartments for study, each study having two sleeping chambers attached; the Franklin College, ninety feet long and thirty wide, was divided into three halls with eighteen rooms for study, to each of which were attached two sleeping rooms.

The Lyceum was an edifice of two stories, sixty feet in length and forty feet in width, having a porch of the Ionic order on the whole front, surmounted with the belfry of the University. This building contained the Chemical and Physical Laboratories, the Cabinets of Mineralogy, Geology, and Natural History, and the lecture rooms of the Professors. In 1842, an Astronomical Observatory was built, and equipped during the next ten years with instruments of observation of the highest order. In 1845, a residence for the President was built, at a cost of \$30,000, and in 1859, a fourth college hall, of the same dimensions as the Franklin College, was built, at a cost of \$12,000, and three additional Professors' residences were constructed on the college grounds.

On the 4th day of April, 1865, all the public buildings, except the Astronomical Observatory, with their valuable contents, were burned by a brigade of United States cavalry under the command of Brigadier-General Croxton, of Kentucky. Two of the Professors' residences were burned at the same time.

In 1868, the Board of Trustees built, at a cost of \$100,000, the present University Hall. This structure is four stories high in the centre, with wings three stories high, and broad verandas extending along the whole front of every story. It embraces sleeping and study rooms for one hundred and fifty students, two halls for the literary societies, lecture rooms, chemical laboratories, library room, cabinets of mineralogy, geology, and natural history, and a large dining hall with kitchens and store-rooms attached. There are on the grounds a President's mansion and five residences for Professors. The University is sorely in need, just now, of ampler accommodations for its rapidly growing libraries and cabinets, and for the yearly increasing number of students.

In 1860, the military system was adopted for the government of the university, and has been maintained to the present time.

As now constituted, the University has two general departments of instruction: An Academic department, and a department of Professional instruction.

The mode of instruction in both departments is by lectures, and recitations from approved text books, accompanied by daily examinations, oral and written.

In the Academic department there are now nine schools. The School of the Latin Language and Literature; the School of the Greek Language and Literature; the School of the English Language and Literature; the School of Modern Languages; the School of Chemistry; the School of Geology and Natural History; the School of Natural Philosophy and Astronomy; the School of Mathematics; the School of Mental and Moral Philosophy.

In the department of Professional Education there are three Schools: The School of Law; the School of Civil Engineering; the Medical School.*

The Degree of *Graduate in a School*, is conferred on all students who pass, without regard to time of residence in the University, the final examination for graduation in all the subjects taught in that school, with a grade of 80 per cent., or more, of all the merit marks attainable.

The Degree of *Bachelor of Arts*, is conferred on all students who pass, without regard to time of residence, the final examinations in seven of the nine schools of the academic department, viz: the general examinations in four and the special examinations in three of these schools.

The Degree of *Master of Arts*, is conferred on all students who pass the final examinations in seven schools, viz: The general examinations in three, and the special examinations in four of these schools with a grade of 90 per cent., or more, in all.

The Degree of *Bachelor of Laws*, is conferred on graduates in the School of Law; and the Degree of *Civil Engineer* is conferred on graduates in the School of Civil Engineering.

The Academic year begins on the first Monday of October, and ends on the first Thursday of July, which is Commencement Day.

The yearly expenses of a student in the Academic department, exclusive of clothing and traveling expenses, are \$190. This amount covers all charges for tuition, board, lodging, wash-

* The Medical School is established in the city of Mobile, and has only a nominal connection with the University.

ing, fuel, lights, servant hire, medical attendance, and use of library. These charges are probably lower than those of any other institution of equal grade in the Union.

Three students from each county of the State are admitted to the Academic Schools without payment of tuition fees, on the recommendation of the Trustee of the District in which the applicants reside.

The collections of the University, in Mineralogy, Geology, and Natural history, are extensive and valuable. The Geological and Mineralogical cabinets comprise many thousand specimens, consisting in part, of the private collections of the late Professor Michael Tuomey, purchased by the University before the late war; partly of the minerals, rocks, and fossils, collected by Professor Tuomey while he was Geologist of the State; of the collections made by the present State Geologist; and of many interesting specimens obtained by exchange from all parts of the world.

The Chemical and Physical Laboratories are furnished with the newest and most approved apparatus for the purposes both of instruction and research.

Besides numerous instruments of smaller size, the Astronomical department is provided with an Equatorial Telescope, having a focal length of twelve feet, and an object glass of eight inches, clear aperture.

The Library, formed mainly by the gifts of enlightened friends of the University, both in and out of this State, now contains about 6000 volumes, exclusive of pamphlets and unbound works.

The University, now in the forty-sixth year since its halls were opened, counts on its rolls about 700 graduates, of whom 201 are known to be deceased. A valuable Register of all the officers and graduates of the institution, since its foundation, has just now been printed, which gives, besides the names of the graduates, their vocations, a record of public and official stations, filled by each, the original and present residences of those yet living, and the last place of residence, and the year of death of those who are dead. Many of the graduates fill the highest stations in Church and State and society, throughout the South.

The number of students in the University during the past year* was one hundred and seventy-seven. The University is under the management and control of a Board of Trustees, consisting of the Governor, and Superintendent of Education, *ex-*

* Session of 1877-78.

officio; two members from the Congressional District in which the University is located, and one from each of the other Congressional Districts in the State, appointed by the Governor, confirmed by the Senate, and who hold office for the term of six years. The Governor is President of the Board. The Trustees receive no compensation, other than actual expenses. This Board has enlarged powers in the administration of the University, appoints its faculty and officers, fixes their salaries, and may remove them at discretion; regulates the government of the institution, and prescribes courses of instruction, rates of tuition, price of board, etc. The **University Fund**, from the annual revenue of which the University is, in a measure, supported, consists of \$300,000, proceeds of the original land grant of Congress, deposited with the State, and for the payment of the interest on which, at 8 per cent. per annum, the faith and credit of the State are forever pledged.

The General Assembly has power to change the location of the University, but only upon a vote of two-thirds of its members, taken by ayes and nays and entered upon the journals.*

THE AGRICULTURAL AND MECHANICAL COLLEGE.

This institution is located at Auburn, in Lee County, sixty miles, by rail, northwest from the city of Montgomery, and directly on the line of the Western Railroad of Alabama. The region is high and healthful—being 850 feet above tide water.

By an act, passed July 2, 1862, Congress donated to each State, 30,000 acres of public land, or land scrip to that amount, for each Senator and Representative in Congress, to which the State was entitled by the census of 1860, to enable it to endow and maintain at least one College, "Where the leading object should be, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in such manner as the Legislature of the State might prescribe, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." The capital accruing to any State from the sale of this land, or scrip, was directed to be invested in some safe fund, producing not less than 5 per cent. per annum—the capital to remain forever undiminished, and the annual interest to be inviolably appropriated to the support of the College, or Colleges, established; but 10 per cent. of the amount received by any State from such sale might

* For roll of the Presidents of the University, since its opening, see APPENDIX.

be used for the purchase of sites and experimental farms. No part, however, of either capital or interest, is allowed to be used in the purchase, erection, preservation, or repair of any building or buildings. A State taking advantage of the act, was required to provide, within five years from its passage, at least one College, or the grant failed and the State was required to refund. The act, also, excluded from its benefits, every State engaged in "rebellion or insurrection, while so engaged."

Under this act, Alabama became entitled to 240,000 acres, but being, at that time, engaged in war with the United States, was, for the while, excluded from its benefits; and nearly three years of the five allowed, expired before peace was restored.

By an act passed July 23, 1866, Congress extended the time within which the States might comply with the provisions of the original act, giving the States three years from the passage of the later act within which to file an acceptance of the benefits of the act of 1862, and five years from the filing of such acceptance within which to establish the necessary College or Colleges.

The General Assembly of Alabama, by an act, approved December 31st, 1868, accepted the grant, and appropriated \$1,000 to carry such acceptance into effect, and to pay agents for selecting and locating the lands or selling the scrip. This state received only scrip, which was sold, and the proceeds invested in the bonds of the State. The amount realized, and which constitutes a permanent endowment fund of the College, never to be diminished, was \$253,500. The rate of interest paid on these bonds is 8 per cent., making the sum of \$20,280 a year, which is appropriated exclusively to the support of the College.

The act of the General Assembly, establishing the College, was approved February 26, 1872. When the question of the location of the College came before the General Assembly, three places made offers for it—Florence, Birmingham and Auburn. The Trustees of the "East Alabama College," located at Auburn, offered their building with its grounds, and the citizens of Auburn offered, in addition, 200 acres of land. After a warm contest, the College was given to Auburn. On the 20th of March, 1872, the Board of Trustees of the new College, appointed under the act of February 26, 1872, met, organized the institution, and elected a faculty, and the College was opened immediately. Since that time extensive repairs and improvements have been made on the original building, and it is, now, large and commodious, well furnished with rooms for College purposes, and capable of accommodating 300 students.

The State Constitution prohibits any removal of the institution, except by a two-thirds vote of the General Assembly, taken by ayes and nays, and entered on the journals. The College is under the management and control of a Board of Trustees, composed of two members from the Congressional District in which it is located, and one from each of the other Congressional Districts in the State, appointed by the Governor, and confirmed by the Senate, and who hold office for six years. The Governor and Superintendent of Education, are, *ex-officio*, members of the Board and the Governor is its President. Trustees receive no pay, other than their actual expenses. The faculty of the College, comprising a President, and complete corps of instructors, is elected by the Board of Trustees. The Board also, fixes the salaries of these officials, and makes rules and regulations for the government of the College. To carry out, in full, the objects of the act of Congress, there is a Military department connected with the College, under a Commandant and other officers, elected by the Board, and all students are members of and cadets in this department; but military science is a secondary aim of the College, and is taught principally as a means of discipline and gymnastic exercise.

The rates of tuition are fixed by the Board of Trustees; but at least two students from each county, to be nominated by the County Superintendents of Education, must be admitted free of tuition; and ministers' sons, and young men preparing for the ministry, are, also, admitted free of tuition. Five independent courses are taught—Agriculture, Literature, Science, Engineering, and Surveying; and academic and honorary degrees conferred. In connection with the College, there is an excellent Preparatory School, with graded classes, and free of tuition. There is, also, connected with it, a Normal Department, for the training of teachers. The institution has two Experimental Farms—one at Auburn, the other near Courtland, in the Valley of the Tennessee. On these farms, experiments in grasses, grains, textile and forage plants, vegetables, modes of culture, fertilizers, etc., are in progress. The classes make frequent excursions for the inspection of machine shops, mills, furnaces, and engineering works; and, in vacation, the geological students accompany the State Geologist on his tours throughout the State. The Chemical and Philosophical apparatus of the College is extensive; and its Cabinet of Minerals comprehensive. It has, also, a good Museum, containing many rare and wonderful specimens. At this College, as well as at the University of Alabama, the Geology of the State is

fully illustrated, it being the duty of the State Geologist to furnish the institution with a full suit of all the minerals of the State. The College has, also, an Industrial Museum, containing machines, implements, and models or plans of such, and of bridges, etc.; a full set of models for drawing; and a large collection of English, German, and French, architectural and mechanical Photographs and Drawings. Attached to the institution, and designed for instruction, is a complete set of Telegraph Apparatus. The Military Department has been supplied, by the State, with a full set of breach-loading cadet rifles, swords, and accoutrements. The location is one of the most elevated and salubrious in the State, and entirely free from epidemic disease of any character. The health statistics of the College compare most favorably with those of any college in the United States; and every attention is devoted to hygiene, and sanitary regulations. The institution is in a very prosperous condition; the number of students in attendance the past session * being 238, with a prospect for a large increase next year. Catalogues and full information can be had on application to any of the faculty.

THE ALABAMA INSTITUTION FOR THE DEAF AND DUMB, AND THE BLIND.

This Institution is located at Talladega, on the Selma, Rome, and Dalton Railroad.

The first act of the State Legislature for its establishment was that of January 27th, 1860. This act contemplated the education of the deaf and dumb, only, and made no provision for the blind. It incorporated Gabriel B. DuVal, the then State Superintendent of Education, and his successors in office, and four other Commissioners to be appointed by the Governor and confirmed by the Senate, under the name of "The Alabama Institution for the Deaf and Dumb," and gave them all the powers necessary to carry into effect the object of the act, which was, primarily, to afford the means of education to the indigent deaf and dumb of the State. The incorporators were, also, empowered to locate the institution, and purchase or erect suitable buildings, and the sum of \$20,000 was appropriated for that purpose, and the further annual sum of \$5,000 for its support.

December 8, 1863, an act was approved, increasing the annual appropriation to \$8,000. By an act, approved February 8, 1867, a school for the education of the indigent blind of the State was established, to be conducted within the halls of the Institution

* Session of 1877-1878.

for the Deaf and Dumb, and to be under the control of the Board of Commissioners of that Institution, and an annual sum of \$2,500 appropriated for its support. February 11, 1870, an act was approved consolidating these two schools under the name of the Alabama Institution for the Deaf and Dumb, and the Blind; and the Governor, *ex-officio*, and three other persons to be by him appointed, were added to the number of incorporators, and the annual appropriations for its support increased to \$13,000, and an additional sum of \$3,000 appropriated to buy books, apparatus, and musical instruments, and to make repairs. An act approved December 18, 1871, further increased the annual appropriation to what it now is, \$18,000.

Under the authority conferred by the act of January 27, 1860, the main building of the Institution, with its landed property, was purchased. This building, which is an imposing and capacious structure, three and a half or four stories high, was erected by Clinton Lodge, No. 28, of Free Masons, and was in use by that order as, "The East Alabama Masonic Female College." The corner stone was laid April 12, 1860, and the original cost \$27,000. Since then, there have been erected two other brick buildings, four stories high, at a cost of \$9,000. The landed property of the Institution consists of the lot on which the buildings stand, containing 17 acres; and 80 acres lying three miles off. The location is a pretty and most healthful one—only one death occurring in the school since 1867; and the buildings and grounds, tastefully arranged and handsomely kept, present a very attractive appearance.

The Institution is under the control of a Board of Commissioners, composed of the Governor, and the Superintendent of Education of the State, and their successors in office, and seven others appointed by the Governor and confirmed by the Senate. This Board elects one of its members President of the Board, and names a Secretary and Treasurer. The chief executive officer of the Institution is called the "Principal," and is appointed by the Board. This officer nominates to the Board such assistants as he deems necessary, and the Board appoints them. The Board fixes the compensation of the Principal and his assistants. The main object of the Institution is declared to be to afford the means of education to the indigent deaf and dumb, and the blind of the State; but those who are able, may avail themselves of its advantages, by paying tuition and other expenses.

An application for admission must be in writing, sworn to, and

addressed to the Board of Commissioners, and must state name, age, place of birth, and present residence, and how long the applicant has been a resident of this State; that he is deaf and dumb, or blind, and that he is unable to pay board and tuition; and if he is unable to clothe himself, the Probate Judge of the county must so certify, and the Institution clothes him, and it is charged to his county. The Institution is, also, open at reasonable charges, to those who are able to pay, upon application, in writing, stating name, age, and residence. The ordinary branches of an English education and music are taught in the Institution; and the French method of signs—the method of the “Abbe Sicord,” is employed. Pupils are, also, taught a trade by which they may support themselves when they leave.

Since its opening, there have been received into the Institution 200 pupils—forty of whom were blind. The number now* in the school, is fifty—mutes, thirty-eight; blind, twelve. Both males and females are admitted. Full information furnished on application to the Principal.

* THE MEDICAL COLLEGE OF ALABAMA, AT MOBILE. †

In the year 1858, the physicians of Mobile felt the need of a Medical College in the State, and several of them, seven in number, consulted together, and agreed to take steps for the establishment of such. The late distinguished Professor J. C. Nott, was enthusiastic in the undertaking, and principally through his influence the plan was carried out. A board of twelve trustees was selected, and some thirty or forty of the citizens of Mobile subscribed about fifty thousand dollars to purchase a museum and chemical apparatus, and Professor Nott, in the summer of 1859, proceeded to the European capitals, for the purpose of selecting specimens to illustrate the various branches of medicine. The articles for the museum arrived in the autumn, and the College opened in a rented building, with one hundred and eleven students. The museum was selected with great care, and was considered one of the best, if not the very best, medical museums in the United States. Encouraged by their success, the Faculty and Trustees applied to the Legislature of Alabama, and a charter, with an appropriation of fifty thousand dollars, was obtained, in 1860.

This large amount of money was expended in erecting a com-

* June, 1878.

† This College, though not strictly a State institution, is more conveniently classed as such.

modious building, which, for size and appointments, is second to none in the country.

The second course of lectures was delivered in the new College, and was attended by one hundred and thirty-two students. The College was rapidly gaining reputation, when the civil war broke out, and put a stop to all the educational establishments in the South. Six, out of seven, of the professors, went into the military service, and nothing was done in the way of lecturing during the remainder of the war. At the close of the war, the Freedmen's Bureau took possession of the College, and maintained it as a primary school for young negroes, for nearly two years. In 1868, having got possession of the building, the Faculty issued a circular for a course of lectures, and since that period, lectures have been steadily going on during the fall and winter seasons, to the present time. The poverty of the South, since the war, has prevented a large number of young men from studying the learned professions; but still the attendance at the Medical College of Alabama has averaged from fifty to ninety students at each session. The number of alumni, since the opening of the institution, amounts to over three hundred, and these graduates are scattered, principally, through Louisiana, Alabama, Mississippi, Georgia, Florida, and Texas.

The course of instruction is now very thorough. The law to "regulate the practice of medicine in Alabama," passed at the last session of the Legislature, requires that the students should be taught with great care, and to this end, the Professors in the several departments labor assiduously to make the course as thorough and practical as possible. The large hospitals in Mobile are freely made use of in the study of disease at the bedside of the sick.

The College has no regular endowments, but, in addition to the original appropriation, the Legislature, in 1870, made an appropriation of ten thousand dollars for necessary repairs on the building. The institution has no connection with the State, except that, when it ceases to be used as a Medical College, the building is to revert to the University of the State. Such are the terms of the charter. The charter also gives the Faculty the full privilege of filling vacant chairs, and, by a vote of two-thirds, of getting rid of the occupant of any chair for incapacity or other good cause. At the present time, there are eight full Professorships, each Professor being fully qualified to teach his particular branch. The Faculty, however, contemplate making new special departments, as occasion, and the onward march of medi-

cine require. Mobile has been proven to be a good centre for the diffusion of medical knowledge. Its genial climate, its natural advantages, and the general hospitality of its inhabitants, all contribute towards making it a proper site for a medical school; and no pains are spared by the Faculty to make the school attractive and useful. The library of the College consists of some four hundred volumes and pamphlets. The books of plates are very valuable, and very useful in illustrating the lectures. The members of the medical profession of the State are in sympathy with the institution, and have contributed to the museum a great many valuable specimens bearing on medical and surgical pathology.

THE ALABAMA INSANE HOSPITAL.

This State institution, supported by annual appropriations of the General Assembly, is located in the county of Tuscaloosa, about one mile from the city, and easily accessible by the trains of the Alabama Great Southern Railroad, and the steamboats of the Warrior River. The site, a very pretty and healthful one, was selected with great care by a committee of five Commissioners appointed for the purpose. The Hospital was established by an act of the General Assembly, approved February 6, 1852; but it was not completed until 1860. This act created a fund, to consist of 5 per cent. of the total revenue of the State, other than from trust funds, for four years, to purchase a site and lands, and erect suitable buildings. By an act of February 6, 1856, an additional sum of \$150,000 was appropriated to complete the Hospital; and by an act of February 6, 1858, the further sum of \$5,000 was added to purchase furniture, and enclose forty acres of the grounds around the building, with a plank fence and live hedge. February 21, 1860, another act appropriated \$25,000, to complete the purchase of furniture and pay the resident officials of the institution.

The main object of the Hospital is declared to be to provide accommodation for the indigent insane of the State; but paying patients are admitted on reasonable terms. The Hospital is open to both white and colored, male and female; but the two races are provided for in separate and distinct apartments. The institution was thrown open to the public, in 1860, and Dr. Peter Bryce, an accomplished physician and most exemplary gentleman, elected its Superintendent—a position he has filled ever since, with great credit to himself and advantage to the State. His administration has been faultless, and under his management, this

great charity has done immense good in humanely providing for those whose affliction must ever awaken the tenderest sympathy. The Hospital is under the control of a Board of Trustees, consisting of a President, and six others, appointed by the Governor and confirmed by the Senate. The officials of the Hospital are, a Superintendent, Treasurer, two Assistant Physicians—one for the male, the other for the female department, a Steward, and Matron. These are called the resident officers, and, with the exception of the Treasurer, must reside in the Hospital. The Superintendent and the Treasurer are appointed by the Trustees; the former for eight years. The Superintendent appoints the Assistant Physicians, Steward, Matron, and all the nurses, servants, agents, and other employes of the institution, and has direct supervision and control of them, is accountable for all their acts, and may discharge them at pleasure. The Trustees fix the salaries of all employed about the Hospital, that of the Superintendent included, and may remove any of them. The act, establishing the institution, requires the Superintendent to be a skillful physician, of a humane, kindly, disposition; bear an unblemished moral character; be a married man, and reside, with his family, in the Hospital.

The clothing, board, medical attendance, and nursing of the indigent insane are provided at the expense of the State, which allows the Hospital \$4 a week for each such patient. Criminals, who are insane, are, also, sent to this Hospital, and supported by the State, with the same allowance. Paying patients pay according to care received, and, before admission, are required to furnish bond for charges, and pay three months in advance. In the order of admission, the indigent insane have precedence of the rich, and recent cases of both classes over those of long standing. Non-resident paying patients are admitted whenever there are vacancies unclaimed by residents. The capacity of the Hospital is always taxed to the utmost, and frequently there are no vacancies. There are now * 400 patients in the institution.

The Hospital buildings are constructed of brick, with solid foundations, and comprise a large central building, four stories high, and surmounted by a handsome dome, with a wing three stories high, extending in a right line on either side. Viewed from the front or rear, the buildings present a right line of 784 feet. The sills and caps of the doors and windows are of stone; and the partition walls of brick, thus rendering the buildings fire proof. The roofs are covered with tin. As an additional safe-

* May 16, 1878.

guard against fire, the Hospital is supplied with a fire engine and hose—which can, in a moment, be attached to pipes leading from the tanks in the attic, and any part of the buildings flooded. The institution has, also, a number of Fire Extinguishers. Every care is taken to prevent fire, and the danger of such is reduced to a minimum,

The central building contains some thirty large rooms—exclusive of a beautiful and commodious Chapel—and is appropriated to business offices, public parlors, officers' quarters, kitchens, storerooms, and servants' rooms. The wings, together, contain eighteen Halls or Wards, and upwards of three hundred Dormitories for the use of patients. Each ward has a distinct dining room, parlor, bath room, drying room, and water closet; and is intended to accommodate about twenty patients.

The Hospital is provided with an improved French Range, for culinary purposes, and to supply hot water. It has, also, a Steam Laundry, well fitted up with the most improved washing machines, rinsing tubs, etc.; a 30-horse power steam engine: two steam pumps; a grist mill; and machine shop. The barns, stables, and cattle sheds, are built of brick, and are very convenient and commodious.

The farm and garden of the institution, comprising, together, about 100 acres of arable land, and which are models of energy, skill, and taste, are in the highest state of cultivation, and yield enormously. Most of this work is performed by the patients, and the product contributes greatly to the support of the institution. The flower gardens and hot houses of the Hospital, are very rare and extensive, and a source of perpetual interest to its inmates. Every ward overlooks beautiful and fragrant *parterres*. In fair weather these gardens and lawns are dotted in every direction with groups of patients, cultivating or gathering flowers. The sewing bees of the female patients add largely to the resources of the institution, in the great number of articles of male and female wearing apparel made at them.

The patients are cheerful and happy, and the institution ranks among the very best of such establishments in this or foreign countries. In 1876*, the proportion of cures to admissions was 40 per cent., and the mortality during that year less than 5 per cent. of the whole number under treatment—the deaths, even at that low rate, being, for the most part, confined to the aged, and those whose constitutions had been exhausted by long continued

* The statistics of this year are taken, because the sessions of the Legislature being biennial, there has been no report of the Superintendent since.

bodily and mental disease. With but two exceptions, there has been no case of suicide, homicide, or even severe violence, committed in the Hospital during the whole course of its existence. These exceptions occurred in the year 1876, when one patient strangled himself in the night time in his room, with a small linen pocket-handkerchief, twisted very tightly about his neck and attached to the low foot board of his bedstead; and another was drowned in the Warrior river in an attempt to escape. No blame, whatever, attached to the officials for either of these deaths—to guard against which being beyond the power of human foresight and watchfulness.

The moral and disciplinary treatment of the patients is mild and humane, and marked by an entire absence of force, and unnecessary restraint. Only when it becomes absolutely essential to the patient's good is he restrained in any way, and then in the gentlest and most parental manner. Every effort is made to amuse and divert the patients and facilitate their restoration, by evening walks, carriage drives, stereosceptical exhibitions, musical concerts, amateur dramatic performances, dancing, tea parties, public lectures, debating societies, and conversational soirees. Frequently dramatic troupes, visiting Tuscaloosa, give free exhibitions at the Hospital. There are, also, quilting, knitting, and sewing bees among the female patients; while for the males, there is a beautiful ten-pin alley and billiard room, well fitted up. There is, also, a fine library in the institution, filled with books, periodicals, and pictures—many of which were donated by the benevolent. A large number of newspapers are sent to the institution by their publishers, free. There is a beautiful chapel in the central building, where daily morning prayer by the Superintendent is had, with singing and organ accompaniment; and on Sunday afternoons, services by the ministers of the various religious orders in Tuscaloosa. For a number of years, and until quite recently, there was an interesting little paper, called the *Meteor*, edited and printed exclusively by the patients, issued monthly from the hospital. From its opening until October 1, 1876,* there had been admitted into the institution 1205 patients; of which number 679 were males, and 526 females.

THE ALABAMA PENITENTIARY.

This institution is located at the town of Wetumpka, in the county of Elmore, and on the left bank of the Coosa River, about 37 miles, by water, northwest of the city of Montgomery.

* Date of last Report.

At present, it is accessible by the steamboats of the river; but when the branch railroad now under construction, is completed between Wetumpka and Elmore station, on the South and North Alabama Railroad, it will have ample rail communication. The location is a healthy one, and the Penitentiary, with its hills and high surroundings, and the beautiful Coosa river flowing immediately in its rear, has very much the appearance of a Baronial Castle of the Old World, and looks like anythi g, but a prison.

It was established by an act of the General Assembly, approved January 26, 1839; and opened for the reception of convicts, February 8, 1842, at which time the new penal code of the State, adapted to Penitentiary punishments, and adopted by act of January 9, 1841, also became operative under the proclamation of Gov. Bagby. It will thus be seen that the Penitentiary has been in active operation for more than 36 years; and its fortunes and experiences during that time have been very varying. At times a cripple, supported by and embarrassing the State—at other times, self-supporting and a source of revenue to the State.

The act of January 26, 1839, appropriated \$30,000 to purchase land and erect buildings. Wetumpka was selected as the place of location by a joint vote of the General Assembly—the act of 1839, requiring that the institution should be located at a point not exceeding 50 miles from the centre of the State. By the same act, three Commissioners were required to be appointed to superintend the erection of the buildings; and three others to compile a penal code adapted to the Penitentiary system. By act of January 8, 1841, the sum of \$36,000, additional, was appropriated to complete the buildings.

The prison was managed by the State, and supported by annual appropriations, until 1846, when the first law authorizing its lease was passed, February 4, of that year. Under this act, the institution was leased to Jno. G. Graham. At the expiration of his lease in 1852, it was leased to Jordan & Moore. Their term expiring in 1858, it was leased to Burrows, Helt, & Co. In 1862, two years before this lease expired, Dr Burrows was killed by one of the convicts, and the prison reverted to the State, when Dr. M. G. Moore was appointed Warden, and continued as such until 1867, when the institution was leased to Smith & McMillan. This lease ex'iring, Dr. Moore was again made Warden. In 1872, Gov. Lewis appointed Larkin Willis, Warden; and in 1874, when Gov. Houston came into power, he appointed the present Warden, Col. Jno. G. Bass, who has con-

tinued to fill the office until now, with signal credit to himself and profit to the State.

The first act authorizing the lessee of the Penitentiary to work the convicts *outside* the walls, was approved December 6, 1866.

By authority of an act approved March 29, 1873, a farm and mules were purchased by the State, to be used in connection with the Penitentiary—upon which farm so much of the convict labor as could be profitably employed, was required to be worked. Bonds of the State, having ten years to run and constituting a lien on the land, were given in payment. The farm is in Elmore county, near the Penitentiary. The farm not proving a success, it was, by act of March 10, 1875, in effect returned to its vendor to keep for eight years, and he given the labor of 100 convicts, free, for that period, on condition of a surrender to the State of the bonds issued to him. The mules and material on the farm were, also, turned over to him, for eight years, without charge.

By an act of March 18, 1875, the Warden was authorized to hire out the convicts to contractors, anywhere in the State. Such contracts not to be for a longer term than 5 years, and to be approved by the Governor. But the Warden is required to employ as many within the walls as he can profitably.

The chief Executive officer of the Penitentiary, is the Warden, who has immediate superintendence and control of the institution. He is appointed by the Governor. There is, also, a Board of Inspectors, which make the rules and regulations of the institution, and is required to visit and inspect it regularly, and report to the Governor.

The buildings of the Penitentiary present an imposing and attractive front, facing to the east. Extending the entire distance of this front, and 60 feet in width, is a fine yard, enclosed with neat palings, and lined with shade trees. In this yard are handsome summer houses, and cultivated shrubbery, the work of the present Warden, as was, also, the enclosing of the yard. In the front of this yard, and still to the east, lie the garden, stock lots, and rich meadow of the institution, covering about 35 acres of land. The garden is made to produce a superabundance of vegetables for the Prison uses. The walls of the Prison, running back to the west, enclose four acres of ground in a square. This court has, also, been adorned by the present Warden, with shade trees, and is kept as neat as Madison Square, in New York City. On the west side of this court, is a line of good and substantial brick buildings, in excellent repair, in which are the

kitchen, dining room, Deputy Warden's office, chapel, and blacksmith and wood shops. A similar line of buildings extends across the north side of the court, in which are the paint shop, granaries, stables, storing rooms, etc. In the centre of the yard, and in excellent repair, is a commodious hospital building, of brick. There are five hydrants connected with the Prison, affording a bountiful supply of pure freestone water, conducted by pipes from the cool springs of the mountains, which are near by and overlook the Prison. There are, also, bath and wash-houses. Immediately in rear of the Prison, flows on in ceaseless and merry ripples, the beautiful Coosa river, whose transparent waters, mirroring the blue skies, eventually lose themselves in the Bay of Mobile.

Previous to the administration of Col. Bass, the Penitentiary was a great burden to the State, and had become very much dilapidated; but under his efficient management, the institution has been completely re-habilitated, and is now prosperous and a source of much annual revenue to the State. The discipline is humane, but firm; the health of the convicts good, and the escapes few, when it is taken into consideration how many of the convicts are employed outside the walls by private contractors. When they escape, they are almost invariably re-captured. The penalty for escaping, or attempting to escape, is double the term of the original sentence, to commence at the expiration of the latter. Under the act of March 18, 1875, there is a large and growing demand for convict labor, a large amount of which is employed in the coal and iron mines of the State. The convicts, as a rule, prefer to work out to remaining within the walls of the Prison. The number at work outside the walls on the 30th day of September, 1877, was 577. The amount earned by convict labor from all sources under contract during the fiscal year ending that day was \$26,471.18, to which must be added \$117.00 due from the United States for feeding its prisoners. The total expenditures during the same period, and which included \$300 paid for 30 acres of land, amounted to \$7,640.25—showing a balance of receipts over expenditures, of \$18,947.93. Add to this, the year's value of the labor of the 100 convicts turned over to Thos. Williams, and being the third yearly installment paid on account of the penitentiary farm purchased from him—\$6,000; the value of labor performed on the Wetumpka Branch Railroad by convicts under Warden Bass, at the expense of the State—\$2,801.00; and \$3,651.35 for permanent improvements made by convict labor within the walls, and it will be seen that the real net income to

the State during that fiscal year, from the Penitentiary, was \$31,400.28.

The total number of convicts in the Penitentiary October 1, 1876, was 520. Received between October 1, 1876 and October 1, 1877, 311. Number discharged, died, pardoned, etc., during that time, 176. Remaining in the Penitentiary October 1, 1877, 655. Of the 520 convicts remaining on hand October 1, 1876, and the 311 received between that date and October 1, 1876, 519 were natives of Alabama; 750 colored; 256 were convicted of burglary, 266 of grand larceny, and 96 of murder.

Part Sixth.

Sketches of the Four Principal Cities of Alabama, and of Birmingham, and Cullman.

MOBILE.

Mobile is first among the cities of Alabama, in point of area, population, and general importance. It is situated in latitude $30^{\circ} 42'$ N., longitude 88° W.; and on the right bank of Mobile River, immediately at the head of Mobile Bay, from which it derived its name.* It is, by rail, 180 miles southwest of Montgomery, Alabama, and 141, east by north, of New Orleans, Louisiana; and about 30, by water, to the north of Mobile Point, where the Gulf of Mexico begins.

The site of Mobile, as originally established by Bienville in 1702, was at the mouth of Dog River, some eight or nine miles to the south of the present city, on the western shore of the Bay;† but owing to inundations and other causes, it was, in 1711, removed by him to where the city now stands.‡ The settlement at Mobile was first under the dominion of France, then of Spain, afterwards of England, and finally came under that of the United States. These changes in ownership will account for the varied styles of architecture to be found within the city's limits. Mobile was incorporated as a *city*, by an act of the Alabama Legislature, approved December 19, 1819. It is built on a sandy plateau, only slightly elevated above the level of the sea, but sufficiently so for fair natural drainage. The soil consists of a coarse, loose, sand, which absorbs the heaviest rains in a few hours, leaving the streets perfectly dry. The country skirting the river bank, immediately to the north of Mobile, and also that to the east of the city for a number of miles, is marshy, and, at certain seasons of the year, malarial; but on the south and southwest there is a broad sweep to the Gulf, with nothing to obstruct the delightful salt breeze for which Mobile is so noted, and which moderates the summer temperature to an extent sufficient to render the city, at all times, comparatively cool and pleasant, with a thermometer below that of many interior cities of much higher lati-

* For origin of the name, *Mobile*, see *ante*, p. 5, *note*.

† Pickett's History of Alabama, Vol. 1, p. 191.

‡ Pickett's History of Alabama, Vol. 1, p. 207.

tudes. On the west and northwest of the city, the adjoining country is made up of high, sandy, health-giving pine hills, where pure water is abundant, and malaria unknown; affording excellent summer homes, and inexpensive retreats from the heat and dust of the city during the hot months.

The corporate limits of Mobile extend six miles, north and south; and from two and a half to three, east and west. Its streets, especially those of the more modern portions, are generally wide and well laid off, and lined with beautiful shade trees—the live oak, water oak, magnolia, etc., giving the city a semi-tropical appearance. Flowers and flower gardens abound, and the orange with its sweet blossom and delicious fruit can be seen in many yards.

By the Federal census of 1870, Mobile is given a population of 32,034, only; but more recent and carefully prepared statistics under the supervision of the city's efficient Board of Health, make the population, at present, about 40,000.

At one time in the history of Mobile, it had the reputation of being unhealthy, owing to several severe yellow fever visitations; but later developments in sanitary science by its able medical faculty, has fully demonstrated that this fever never originates in Mobile, and is always imported. A system of quarantine inaugurated on this theory, a number of years ago, and rigidly enforced during the summer months, has had the effect of keeping the city entirely free of the fever, notwithstanding it has since, frequently raged with violence at other less guarded points on the Gulf and Atlantic seaboard. As a result of this perfect quarantine, which so completely protects the city from a danger once common to all Southern seaports, Mobile is now justly regarded as one of the *healthiest* cities in the Union, as the following mortality table, compiled by an eminent physician of Nashville, Tenn., will attest:

<i>Cities.</i>	<i>White Population.</i>	<i>Death Rate per 1,000.</i>	<i>Colored Population.</i>	<i>Death Rate per 1,000.</i>
Memphis.....	35 000	18.06	15,000	40.06
Chattanooga.....	7,000	18.60	4,500	20.60
Knoxville.....	8,000	18.00	5 000	41.00
Richmond.....	42 830	17 30	32 170	28.13
Dist. of Columbia..	115,000	19 22	45,000	47.60
Baltimore.....	305,000	19 80	45 000	34.42
Mobile.....	28,000	12 15	12 000	23 18
Selma.....	3 500	14.28	4,000	18 88
New Orleans.....	155 000	25.45	55,000	39.60
Charleston.....	24 528	27 21	32,002	41.96
Nashville.....	17,509	21.82	9,582	38.50
Average.....		19.27		33.90

It will be seen from this table, that with the exception of Selma, another Alabama city, and Chattanooga, the aggregate death rate among the whites and blacks of Mobile, is much less than that of either of the other eight cities named—some of which are noted for their healthfulness—as for examples, Knoxville, and Richmond, situated, respectively, in Tennessee and Virginia, two of the most salubrious of the States of the Union. As an evidence of the effective protection against yellow fever, afforded by strict quarantine, it may be stated that, during the four years of the war, when all communication with the outside world was cut off by the blockade, Mobile, and the whole Gulf coast, remained absolutely free of the fever, thus demonstrating, beyond reasonable doubt, that it is always imported and never originates in the city. Yet, if by accident, the fever should ever again be brought to Mobile, the increased facilities for avoiding its approach, afforded by the many new lines of railroad, and street railways, leading out of the city to the neighboring safe retreats, will greatly diminish, if not entirely destroy, its force.

Mobile is supplied by a system of works, with pure, wholesome water, from the pine hills, in rear of the city; and lighted with gas, to a large extent manufactured from coal, taken from the immense measures in the interior of the State.

The city is divided into eight wards, and governed by a Mayor, Board of eight Common Councilmen, and Board of twenty-four Aldermen—with a full corps of subordinate officials, and an efficient police department. It is, also, the County Seat of Mobile county, and among its public buildings, is a large, commodious, and conveniently arranged county Court-house, just completed, at a cost of over one hundred thousand dollars. The other principal public buildings in the city, are the Custom House, a massive structure of Massachusetts Granite, containing the United States Post Office, offices of the Collector of Customs, Collector of Internal Revenue, United States Land Office, and rooms of the United States Circuit and District Courts; the Municipal Buildings, containing the principal Markets of the city, the offices of the city officials, and Armory of the First Regiment Alabama State Troops; the Battle House, the principal hotel; Barton Academy, a large and fine public school building; the Medical College of Alabama; the City Hospital; United States Marine Hospital; and Providence Infirmary. There are, also, a Theatre, and several other large public halls of amusement; many asylums, both Protestant and Catholic; and numerous elegant

and imposing church edifices—every religious denomination being fully represented in Mobile.

A well equipped Fire Department; and all the other appliances of an important city, in the way of banks, fire and life insurance companies, newspapers, lodges, club rooms, relief and benevolent associations, Boards of Health and Trade, Cotton Exchange, street railways, mills, manufactories, etc., are to be found in Mobile.

The Shell Road, for which Mobile is so celebrated, extending to the south of the city for about seven miles, is a beautiful and exhilarating drive, as it winds along the western and Magnolia fringed shore of the lovely bay. Frascati Garden, on this road, about two miles south of Mobile, immediately fronting the bay, and fanned by its sweet breezes, is the famous pleasure resort of the people of Mobile. Arlington, about one and a half miles farther to the south, on the same road, and facing the bay, is another popular resort for the citizens of Mobile. At Arlington, are the extensive grounds of the Agricultural and Mechanical Association of Mobile, where are annually held fair and floral exhibitions in the spring of the year, which attract hither thousands from the interior of this and adjoining States.

Four great lines of railroad radiate from Mobile—the Mobile and Ohio, from Mobile to Columbus, Kentucky, a distance of 472 miles, all under one management; the Mobile and Montgomery, from Mobile to Montgomery, a distance of 180 miles; the New Orleans and Mobile, from Mobile to New Orleans, a distance of 141 miles; and the Mobile and Alabama Grand Trunk, projected from Mobile to Birmingham, a distance of 232 miles, and completed to the Tombigbee river, a distance of 59 miles from Mobile. Fine steamers ply regularly the waters of the rivers emptying into Mobile Bay, going throughout many months of the year, as high as We umpka, on the Coosa, Aberdeen, on the Little Tombigbee, and Tuskaloosa, on the Black Warrior. Mobile is a Port of Entry and one of the largest cotton exporting cities in the United States—the number of bales of cotton exported from this port, alone, during the season of 1877-78, was as follows: To foreign ports, 164,093; coastwise, 253,000; total, 417,093 bales. Mobile, also, exports largely of naval stores, and this trade has increased rapidly since the war, until it has become one of the leading branches of its commerce. The pine forests immediately adjacent are very valuable in this, as well as in other respects, and producers are yearly increasing the capacity of their orchards and stills. Timber exporting, and coffee importing, are two other

principal and remunerative features of the city's trade; while the raising and shipping of early fruits and vegetables to northern eastern and western markets, is a very lucrative business, owing to the light and productive nature of the soil in the immediate vicinity of Mobile. This industry has grown rapidly within a few years past, until it has assumed very large proportions. It invites the attention of, and is sure of reward to, the frugal and attentive gardener. The canning of these fruits and vegetables, also, offers inducements to capital and labor; as does, also, the canning of oysters, which are here found in abundance and of the finest quality. Mobile is, also, noted, and just'y so, for its excellent fish market, for here are to be had and in unlimited quantities, nearly every species of fish. Game, too, abounds—in certain seasons the country being literally alive, with wild duck, deer, etc. Taken all in all, no more desirable city home is to be found in the South, than Mobile; where the climate is equable, the people hospitable, and life supported with much comfort, and, comparatively, little labor.

MONTGOMERY.

Montgomery, the Capital of Alabama, and Seat of Justice of Montgomery county, is situated near the centre of the State, and on the east bank of the Alabama river, 400 miles, by water, above Mobile. About 20 miles to the north of the city, the Coosa, and Tallapoosa rivers unite, and form the Alabama. This last river, in its sinuous course to the sea, makes a great bend in front of Montgomery, resembling a narrow link or loop, at the southeastern extremity of which is the city. So tortuous is this bend, that the distance around is some twelve miles, while the distance across is not one.

Montgomery is located on a steep, wide bluff, running back from the river, and its site was called by the modern Indians, *Chunnanugga Chatty*, or, *High Red Bluff*; and sometimes, *Hostile Bluff*, from the hostile character of the Indians residing in its vicinity. The site of the present city was unquestionably known to the *Mound Builders*, a race of Indians living in the territory of what is, now, the State of Alabama, long anterior to the appearance of the white man, or even the modern Indians. The existence of these Mound Builders in and around this particular locality, was fully attested by two mounds discovered there by the first white settlers, and remaining to attract the curious, until 1833, when the earth composing them was utilized to make brick for the *Planters' Hotel*, of Montgomery, and the mounds so obliterated.

ed. The larger of these mounds, was about ninety feet square, and twenty-five feet high, and from its summit grew a hickory tree, at least a century and a half old when first seen. There were exhumed from these mounds, when leveled, human bones, arrow heads, trinkets, etc. The modern Indians knew nothing of the building of these mounds, or of their singular builders, the race having disappeared long anterior to the former's appearance here.

The Spaniards, under DeSoto, were, probably, the first Europeans to catch a glimpse of this locality, as the route of that famous adventurer through Alabama in 1540, doubtless lay near, if not over the very spot, where Montgomery now stands. The next were the French, when, in 1714, Bienville's fleet of boats pushed up the Alabama river to establish "Fort Toulouse," near the site of the present town of Tuskegee, in Macon County, Alabama. The English did not visit it until after their occupation of this old fort in 1763.

New Philadelphia, by which name the white settlement at Montgomery was first known, was founded by Andrew Dexter, who came from Massachusetts, in 1817, and planted the colony, which grew rapidly and within three years time numbered nearly 500 inhabitants. In 1818, the towns of *East Alabama*, and *Alabama*, were founded in the immediate vicinity of New Philadelphia; but the existence of *Alabama* town was transitory, and its lines soon disappeared.

By an act of the State Legislature, approved December 3, 1819, the hitherto rival towns of *New Philadelphia*, and *East Alabama*, were incorporated into one, under the name of *Montgomery*, in honor of Gen. Richard Montgomery, the hero of Quebec, who fell December 31, 1775, in the attack on that place.

By an act, approved, December 23, 1837, Montgomery was chartered as a city.*

The removal of the State Capital to Montgomery in 1846, was the most important event in the city's history, and tended most to its advancement. Relying upon its favorable situation, from a geographical stand point, and confident that it would eventually become the seat of the State Government, Mr. Dexter, from the first had reserved and set apart the high and beautiful grounds in the city upon which the capitol building now stands, for that purpose; but the generous giver did not live to realize his expectations, for not until some twenty years after his death, was the removal effected.

* The first steamboat which ascended as high as Montgomery from Mobile, was the *Harriet*, in 1821. This boat made the trip in ten days.

The original capitol building was soon under contract, the city issuing its bonds to the amount of \$75,000 to build it; and the elegant structure was completed in time for the session of 1846. Unfortunately, this, first, building was destroyed by fire, December 14, 1849, and as there was no insurance with which to rebuild, and the city had already exhausted its resources, it was feared for a time that the strong efforts made, just after the fire, to remove the seat of government would be successful; but they were not, and the Legislature, then in session, by a suitable appropriation began the work of rebuilding, and the new, and present, capitol was soon erected.

Montgomery will always enjoy the distinction of having been the first capital of the Confederate States of America; for here, February 4, 1861, delegates from six seceding States assembled to organize the Government of that Republic; here its Constitution was adopted in the same year; and here, February 18, 1861, on the steps of the capitol, Jefferson Davis was inaugurated first President, and Alexander H. Stephens, first Vice-President, of a power which has passed from among the nations of the earth forever, but whose brief existence was like some brilliant meteor, and the record of whose armies is marked with a fortitude and daring, unsurpassed by the trained legions of the great Napoleon or the serried columns of the Iron Duke.

Montgomery, in the beauty and changing character of its topography, is one of the most attractive cities of the South, and its site is admirably adapted to the wants and capacities of a large city, which it is destined one day to become. It has a sandy soil, with a clay foundation, and its natural drainage is very fine. The streets of the city are very wide, and handsomely laid out, and all of them well shaded. Montgomery is noted for the beauty and elegance of its private residences; many of which embowered in cool groves, arrest attention and suggest a life of quiet repose, and a high order of refinement. Here, too, flowers abound, filling the air with fragrance, and delighting the eye with variety.

The health of the city is excellent, and its mortality tables will compare most favorably with those of other cities of the Union. It is exempt from disease, generally, except light malarial fevers in the early fall, superinduced, as a rule, by imprudence in diet, or exposure to the sun.

The city is supplied, by a system of new and powerful works, with an abundance of water from the Alabama River; and lighted throughout with gas, from Alabama coal.

By the Federal census of 1870, Montgomery is given a population of 10,588; but nearly a decade has passed since then, and its present population is fairly estimated at 15,000.

The city is divided into six wards, and is governed by a Mayor, and Board of twelve Aldermen, two from each ward; with a competent corps of subordinate city officials.

It has many extensive public buildings, among which may be enumerated the Temple, Market-house, and Exchange Hotel—the State Capitol has, already, been mentioned. It has, also, a well-arranged and elegant theatre, and several other public halls of amusement. The town hall in the Market-house, is said to be one of the largest in the South. The various religious denominations are fully represented in Montgomery, by many fine church edifices. The city has an efficient Fire Department, a full complement of banks, insurance companies, newspapers, lodges, etc., and several manufactories. Among the last may be mentioned the ice factory, and cotton seed oil mills.

Montgomery's geographical location for trade is not surpassed by any interior city of the State. Within a mile of its corporate limits begin the rich prairie lands on the south, and south-east, which are continuous for twenty-six miles; while on the east and west, lands of rare fertility approach very near to the city.

The railroad system of Montgomery is an admirable one, and places the city in direct communication with all points, north, east, south and west. Montgomery has in fact, since the war, become a very important railroad centre; and there are four extensive lines of railroad leading from the city—the South and North Alabama, to Birmingham; the Western, to West Point, with a branch to Selma; the Montgomery and Eufaula, to Eufaula; and the Mobile and Montgomery, to Mobile. Fine steamers, also, ply the Alabama regularly between Mobile and Montgomery, making quick trips, and affording excellent commercial facilities.

The principal trade of Montgomery is in cotton, and the city received during the season of 1877-78, 106,000 bales. A powerful compress located in the city, enables much of this cotton to go by rail to larger markets—for examples, Boston, Philadelphia and Fall River.

Montgomery has a fine market for the table, which is always abundantly supplied with the delicacies of the season, and living in the city is comparatively inexpensive. It is furnished with fish and oysters from Mobile, Pensacola and Savannah.

Like Mobile, Montgomery will afford an excellent Southern home, to those who may seek Alabama, and prefer a city residence.

Its people are kind, hospitable, and peaceable, and gladly welcome all who come with an intention to obey the laws and aid in building up the city.

SELMA.

Selma, a growing and important city of Alabama, is the Seat of Justice of Dallas county, one of the great agricultural counties of the State—a county ranking third in the list in point of population and wealth. The city is situated on a spacious plateau, on the north bank of the Alabama river, one hundred feet above its low water. Selma is about 50 miles, by rail, west of Montgomery; and 308 miles, by water, above Mobile. The founder of Selma, was Thomas Moore, who located there in 1816, and the settlement was first called *Moore's Bluff*, but afterwards, the name of Selma was given to it, the original of which is to be found in Ossian—the *Songs of Selma*. It was incorporated by the latter name, December 4, 1820. The first brick house erected in Selma was in 1822. In 1850, its population was 2,073; in 1860, 3,177; and in 1870, 6,484. At present, it is probably 10,000. The removal of the court-house from Cahaba to Selma, in 1866, did much to increase its population and trade.

Selma was a very important military depot of the Confederate States, and, during the late war, a large powder mill, extensive nitre works, arsenal, and shot and shell foundry, were successfully operated there. April, 2, 1865, Selma was stormed and captured by Gen. Wilson, of the United States army, who burned all these works, with much of the business portion of the city. Selma is a very attractive city, both as a place of residence and business, and its future prospects are among the brightest in the State. With the development of Alabama, will certainly come the growth and material prosperity of Selma, situated as it is in the richest agricultural district of the State, and just below the mineral region, where lie, buried, potent agencies in the building up of cities.

The soil of the city, like that of Montgomery, is sandy, and the drainage good. Like Montgomery, too, its streets are wide and well shaded, and present a very attractive appearance. Selma has many fine residences, and handsome public buildings, while the church edifices of the city are numerous and commodious.

The health of the city is good, and epidemics are never known. The city is well watered, and lighted with gas, manufactured from Alabama coal, taken from the measures just above. The Muni-

cipal Government consists of a Mayor, and Board of Councilmen—two from each of the four wards. The city has a well administered Fire Department; and a full complement of banks, insurance companies, and other necessary institutions. Among its manufactories, is the *Mathews Cotton Mill*, one of the largest and best managed in the State.

Selma is admirably situated for trade, and disputes with Montgomery the reputation of being the second cotton receiving city in the State—its receipts for the past season,* being about 92,000 bales.

To a large extent, it draws trade from the rich prairie and cane-brake counties of Perry, Hale, Marengo, and Wilcox, as well as from Dallas; and furnishes supplies to a large number of the mineral counties of Alabama, to the north.

The lines of completed railroad radiating from Selma, are the Selma, Rome, and Dalton, from Selma to Dalton, Georgia, a distance of 236 miles; the Alabama Central, from Selma to Meridian, Mississippi, a distance of 108 miles;† and a branch of the Western railroad, connecting Selma with Montgomery, a distance of 50 miles. The projected, but uncompleted lines, are, the New Orleans and Selma, completed to Martin, in Dallas county, a distance of 21 miles; the Selma, Marion, and Memphis, completed to Sawyers', in Hale county, a distance of 60 miles;‡ and the Selma and Gulf, completed to Pineapple, in Wilcox county, a distance of 40 miles.

The Selma table market is an excellent one, and supplied, at all seasons, with the necessaries and delicacies of life, to be had at comparatively small cost.

The citizens of Selma are law abiding, industrious, and hospitable; proud of the reputation of their promising city, and anxious to have strangers come and settle among them.

HUNTSVILLE.

Lying in the beautiful, salubrious, and fertile valley of the Tennessee River, in Alabama, which is formed by the southernmost spurs of the Cumberland Mountains—eighteen miles south of the northern boundary of the State, and about ten miles north of the river, is **Huntsville**, the fourth city of the State. It has an elevation of 692 feet above tide water at Mobile, and is in lati-

* Season of 1877-78.

† 27 miles of this distance, viz: from York to Meridian, are over the track of the Alabama Great Southern Railroad.

‡ 14 miles of this distance, viz: From Selma to the Junction, are over the track of the Alabama Central Railroad.

tude 34° 40' 44". Nestling among the hills and mountains of that high region, the city is noted for its picturesque natural beauty and attractiveness, no less than for the historic incidents which have transpired within its limits; while in massiveness and stability of structure, it compares favorably with any city of its size in the Union. It was settled in 1807, by John Hunt, an East Tennessean; and the tide of immigration which set in immediately, was rapid. The original settlers of Huntsville were, principally, from Tennessee, North Carolina, and Virginia, with some from Georgia. Notwithstanding Hunt was the founder, the first name given the new settlement was *Twickenham*.* In 1811, the name was changed to Huntsville, in honor of its founder.† The town of Huntsville was incorporated in 1811.‡

The soil of the valley, in which Huntsville is located, is a rich chocolate-colored loam, with a subsoil of pure, red, clay—very fertile, and producing large and varied crops of cotton, corn, oats, wheat, rye, barley, clover, millet, timothy, blue grass, and red top, and orchard grass, etc.; while the geological formations underlying it, belong to the sub-carboniferous groups of limestone.

The health of Huntsville is excellent, while its elevated location and mountain surroundings free it from the enervating heats of some parts of the lower country. The mean temperature throughout the year, is 57° Fahrenheit—heat in summer 74°, cold in winter 40°. In the reported opinion of the War Department, Huntsville, in a sanitary point of view, is said to be the best military post in the United States.

Within half a mile to the eastward of the city, its summit reached by a turnpike from the city, rises to the height of 1,040 feet above the plain, a mountainous elevation, known as *Monte Sano*—a cool refuge during the summer months, with a climate closely resembling that of the northern portion of North Carolina, and the valley of the French Broad.

The city is laid out in the form of a square, its corporate limits extending three-fourths of a mile on either side of the Courthouse, as the centre of the square. The general structure of its public buildings is of a character for durability and elegance seldom seen in a city no larger; while its church edifices are very

* See Act Mississippi Territorial Legislature, passed December 23, 1809, in Toulmin's Digest of Laws of Alabama, page 106.

† See Act of Mississippi Territorial Legislature, passed November 25, 1811, in Toulmin's Digest Laws of Alabama, page 774.

‡ See Act of Mississippi Territorial Legislature, passed December 9, 1811, in Toulmin's Digest Laws of Alabama, page 774. As *settlements*, Mobile and St. Stephens long ante-date Huntsville, but as an *incorporated town*, it was the first in the State, or rather, Territory, of Alabama.

handsome, and costly. The character of its private residences is not inferior to that of its public buildings. The streets of the city are broad, well graded, solidly and smoothly macadamized, and almost exempt from mud and dust, with superior drainage.

Among the many natural advantages of Huntsville, may be mentioned the large and famous limestone spring, known as *The Big Spring*, which issues from under a rocky bluff, 75 feet high, on the top of which is the public square. This spring is said to be the largest in the United States—so large that, in times past, the stream flowing from it was utilized to float to the Tennessee River, boats with a capacity of 50 bales of cotton. Its water, which is clear, cold, only moderately hard, and of excellent quality, is forced, partly by steam, but mainly by its own power, to a reservoir, which supplies the city.

The city is well lighted with the best quality of coal gas, made from Alabama coal. The educational advantages of Huntsville are fine, for here are located the Huntsville Female College, and the Rotherwood Home for female pupils, both of long standing and well patronized.

Huntsville has three weekly newspapers. It is the county seat of Madison county. The Memphis and Charleston Railroad, which passes through the city, places it in easy and direct communication with the outside world. The population of the city, by the Federal census of 1870, was 4,907; but it is, now, fairly estimated at 6,000.

Huntsville has probably given to the State more illustrious names than any other city within its borders, and is indelibly connected with its history. It was in Huntsville, that the Convention met in 1819, which gave to the State its first constitution; and, here, in the same year, was convened the first Legislature of the newly created State of Alabama.

BIRMINGHAM.

Birmingham, the county site of Jefferson county, is situated about 30 miles northward of the centre of the State, at the intersection of the Alabama Great Southern, and the South and North Alabama Railroads, in the midst of what is commonly known as the mineral region of the State. The former railroad extends from Chattanooga, Tennessee, to Meridian, Mississippi; the latter is a link in the chain of roads extending from Louisville, Kentucky, to Montgomery, Alabama, known as the Louisville, and Great Southern Railroad.

About one mile to the southeast of the corporation, lies Red Mountain, said to be, both as to quantity and accessibility, the most remarkable deposit of iron ore yet known. It extends in a northeasterly and southwesterly direction, parallel with the Alabama Great Southern Railroad; for about 30 miles below and the same distance above the city, attaining its maximum depth of ore opposite the latter place, where it contains several seams of ore averaging nearly 50 per cent. of metal and aggregating about 25 feet of vertical depth. The ores are Red and Brown Fossiliferous. Besides these, there are Magnetic and Black Band ores within reach and of easy access.

On either side of Jones' Valley, in which Birmingham is located, and which is here about five miles in width, lie to the southeast and northwest, respectively, the Cahaba and the Warrior Coal Fields, both of which are traversed by the South and North Alabama Railroad. A dozen or more mines are operated near Birmingham, along the latter road; to say nothing of others off the railroads, which are worked in a rather primitive way, the coal being hauled in wagons to market. Another railroad is soon to be built about six miles westward from Birmingham, into the Warrior Coal Field, by means of which road, its projectors say, they will deliver the best quality of coal in Birmingham for \$1.25 per ton.

The climate of Birmingham is mild and pleasant. The thermometer ranges in summer from about 60° to 90°, while in winter it rarely gets below 20°. The health of the community is excellent. Chills and fever or other malarial diseases rarely ever occur.

The soil of the country adjacent to the city is well adapted to growing the cereals, grasses, fruits, and vegetables. Much attention has lately been given to fruit raising and gardening, and Birmingham has, in consequence, become quite a market for these productions, much of which being shipped to the Northwest.

The unequalled advantages presented by the location for manufacturing, as well as for trade, will be apparent to an intelligent mind. The cheapness of all the raw materials for making iron, and of coal for steam purposes, transportation facilities, together with the healthfulness of the climate and fertility of the soil combine to place it in the front rank as a manufacturing centre.

It may be proper to mention here, that the early completion of the Mobile and Alabama Grand Trunk Railroad, from Mobile to this city, is an assured fact, which will give the shortest and most direct route to the Gulf.

The history of Birmingham dates from July, 1871. Previous to this and before the railroads, above mentioned, were definitely located, the Elyton Land Company was incorporated, and bought up about 4,000 acres of land, immediately surrounding the crossing of the railroads, upon which was laid out the present city, after the most approved plan.

The new-born city grew and prospered, for a while, but received a temporary check in 1873. Having taken its *second growth*, it has recovered itself, and its progress, for the last two or three years, has been steadily upward. Its population is, now, estimated at from 3,000 to 3,500. The General Offices of the South and North Alabama Railroad are here, and its chief officers reside here. The machine shops, also, of this road are here, giving employment to a large number of thrifty mechanics, many of whom have bought lots, built houses, and permanently settled in the city.

The General Land Office of the Alabama Great Southern Railroad, is here, and the Assistant Superintendent of the road, resides here, also.

Among its other industries and institutions, are, two flouring and grist mills, two foundries and machine shops, one steam boiler factory, one furniture factory, one planing mill and chair factory, one agricultural implement works, a National bank, a free public school, several well kept hotels, numerous well stocked stores, six churches, and various other institutions which pertain to a prosperous city. The county Court-house located here, is said to be one of the finest in the State.

Water is supplied by a well planned and built system of water works, the water being taken from Village Creek, two miles distant, whence it is pumped by a Worthington duplex steam pump, into a reservoir 130 feet above the level of the city. Thence it is distributed throughout the city in mains of sufficient size for fire protection, as well as affording ample supplies for domestic use and manufacturing purposes.

When its geographical position, healthful location, commercial facilities, and contiguity to the rich mineral deposits of the State, are all taken into consideration, it will be evident to any one, that the future of Birmingham is bright with promise, and the hopes of its projectors destined to brilliant realization.

THE GERMAN TOWN AND COLONY OF CULLMAN.

In September, 1872, the South and North Alabama, a link in the great chain of Railroads connecting Montgomery, Ala., with

Louisville, Ky., was completed and opened to business. Of the lands along its line, granted to the road by Congress, 300,000 acres were placed for sale, in the hands of Mr. Jno. G. Cullman, an influential German—the founder of the Colony, and in whose honor, it, and the town, were named. On these lands, thirty-three miles south of Decatur, Ala., upon a high and healthy plateau, which seemed as if expressly made for the purpose, Mr. Cullman located the site of his future Colony. His first advertisement, inviting settlers, was in January, 1873, and in February following, five German families arrived and settled there. At this time, the country was all forest, with hardly a house to be seen, and but few inhabitants. Now, there are more than six hundred German families residing in the town, and within a circle of ten miles around it, and the whole appearance of things has been completely metamorphosed by German energy, thrift, and industry.

The *town* of Cullman is laid off on the most approved plan, and surveyed into lots of 165x132 feet, each containing half an acre, with streets one hundred feet wide; has a handsome depot, with telegraph and express offices, and is one of the best and busiest stations on the South and North Alabama Railroad. It has, also, three good hotels, seven well-stocked stores, one large steam flouring mill, two wagon factories and blacksmith shops, three cigar manufactories, two tanneries, eight saw mills contiguous, one lime kiln and brick yard, two shingle and two barrel manufactories, one furniture factory and planing mill, one fruit canning and drying establishment, one brewery, one livery stable, two weekly newspapers, postoffice and money order office, school, Protestant Church, Catholic Church, two beer saloons, a drug store and two good physicians, with butchers, bakers, shoemakers, carpenters, tailors, watchmakers, etc.

Surprisingly rapid as has been the growth of the *town* of Cullman, that of the *Colony* has been even more so. Settlements have sprung up as if by magic, and where only wood and waste were seen before, comfortable dwelling houses, stables, barns, etc., are found, surrounded by cultivated fields with good fences, orchards, vegetable, and flower gardens. If among these, the farm of an old inhabitant is seen, the difference in favor of German labor is apparent at once, and this marked difference has a good effect in stimulating the owner to keep pace with his new neighbor.

The climate of this town and colony is said to be the healthiest in the United States, and to this fact is attributable much of its rapid growth and success. Good water abounds, and the site is

702 feet above the sea level, at Mobile. Epidemics are unknown, and fevers rare. The summers are not oppressive, with cool nights; the winter's short and mild. Snow seldom falls, and, when it does, quickly disappears. The soil is a sandy loam, varying in depth from six to ten inches, with a sub-soil principally of yellow clay, mixed with sand; very productive, with but little manure. Crops of nearly every variety can be raised on the lands of the Colony, such as corn, cotton, wheat, rye, barley, oats, buckwheat, hemp, tobacco, flax, sorghum, broom corn, sweet and Irish potatoes, hops, millet, pea-nuts, clover and other grasses, garden vegetables, etc. Frequently, three crops, in rotation, can be raised in one season. The country is especially adapted to wine growing, as innumerable extensive and flourishing vineyards attest. It is proposed to build a *Grape Cure* hotel in the town, in connection with a fine chalybeate spring existing there. The Department reports of the United States designate this locality as the finest for fruit culture in the Union. Apples, pears, peaches, apricots, strawberries, and German prunes, are some among the numerous cultivated fruits which grow here in abundance; while wild grapes, plums, berries, etc., are to be found in profusion. The woods are abundantly supplied with timber for building and manufacturing purposes; and there is very fine water power. The Colony is rich, also, in iron and coal, while lead and silver have been found in several localities. New settlers, mostly German, for the Colony is German, continue to arrive almost daily, and the population is steadily increasing. The officials of the South and North Alabama Railroad, are warm friends of the Colony, and do all in their power to encourage immigration. One hundred thousand acres of land, lying within the limits of the Colony, have lately been disposed of to the *Chicago Farm and Town Association*, which will materially assist in rapidly peopling it.

The *County* of Cullman was incorporated Janury 24, 1877, and was formed out of portions of Blount, Winston, and Morgan counties. The town of Cullman is the county site. There is a printed pamphlet, fully descriptive of this colony, and illustrative of its many social and natural advantages, published by Mr. Jno. G. Cullman, which can be had, free, on application to him, at Cullman, Cullman county, Alabama.

Part Seventh.

The Water Transportation Lines, and Projected Canals of Alabama.

WATER TRANSPORTATION LINES OF ALABAMA.

Alabama ranks among the first of the States of the Union in the number, extent, and value, of her magnificent **Water Lines**. Every section, and nearly every county, of the State, is watered and afforded commercial facilities by some one or more of its navigable rivers; while the large creeks, and other streams, which flow through and irrigate the soil, are almost innumerable. A single glance at the accompanying map, of Alabama, will verify these assertions.

The importance and value to the State of these great outlets, made to hand by nature, and requiring only a small expenditure of time and money to make them potent agents in its development, cannot well be overestimated.

Commerce follows the course of navigable rivers by preference. Between St. Louis and the cities on the Missouri, all the heavy trade is done by river, though a railroad runs parallel with almost its whole length. These cities have been made great by their rivers more than by their railroads, because the former have served both as means of communication with places not reached by rail, and as checks upon the latter. Louisville ships a car load of salt for a certain amount, by rail to Chattanooga, an inland town, at present debarred from river communication. Louisville ships the same car load on one of her rail lines, for the same distance, running parallel with the Ohio river, at one-third the cost of the carriage to Chattanooga, simply because a boat will carry it at that price. If Pittsburg, Cincinnati, New Orleans, St. Louis, and St. Paul, depended on railroads, alone, for the transportation of their heavy produce, their commercial importance would not be what it is to-day. The same causes which have operated on the Ohio river in creating the wealthy manufacturing districts in Ohio and Pennsylvania, exist here, and only need to be brought into activity by the opening of our rivers to produce a transformation in the condition of this State similar to that which has taken place, during the last thirty years, on the upper Ohio.

To further illustrate of what immense value to Alabama these great water courses will be when properly improved, and to show the relative cost of transportation by water and rail, with the great advantage of the former over the latter mode, in point of cheapness, it will only be necessary to cite here some statistics, collected by the Chief of the Bureau of Statistics, Washington, D. C., and embraced in his annual report for 1876. This report says:

The average *cost* of moving, by rail, one ton of freight from Louisville to Chattanooga, 336 miles, is \$3.62, and the average *charge* for moving one ton the same distance is \$5.64; while, on the Ohio river, the average *cost* of transporting one ton of coal from Pittsburg to Louisville, a distance of 600 miles, is only 56 cents, yet the distance is nearly twice as great. And the average *cost* of carrying one ton of coal from Pittsburg to New Orleans, a distance of 2,000 miles, is only \$1.05. In both instances, the coal is carried in large barges, towed by powerful steamers. It is a noted fact, however, that freights have been carried, for long distances, on the New York Central and Hudson River Railroads, in 1875, at 66 cents per ton per mile. But, says the Auditor of the Canal Department, State of New York, 1876:

The pending campaign against the water route is unquestionably causing great loss to the roads. Of this fact, we only know what the officers of the roads choose to make public. For the fiscal year, ending September 30, 1869, the year preceding the reduction in canal tolls, the gross earnings of the New York Central and Hudson River Railroad Company, exceeded the payments, other than for construction, \$1,137,767.65; and for 1875, the payments, other than for construction, exceeded the gross earnings \$1 581.654.29.

The above rate, 66 cents per ton per mile, is the lowest ever touched in the history of rail freighting, except in temporary exigencies. Yet, at this rate, it would cost \$13.20 to carry a ton of coal 2,000 miles by rail. Hence, as Prof. Maury truly said, "it is almost childish to compare the cost of transportation by 'rail versus water.'"

Prof. Toumey, late State Geologist, in his report on the geological formations of the State, said:

The rivers of Alabama, whether we consider them as one of the great physical features of the State, or in an economical point of view, are exceedingly interesting. There is scarcely an extensive and really valuable agricultural tract in the State that has not its navigable stream.

The first of these Water Lines is,

MOBILE BAY AND HARBOR.*

The Bay of Mobile—the great reservoir of South Alabama,

* For much of the *data* relating to Mobile Bay, and for its distances and depths, the author is indebted to Maj. A. N. Damrell, U. S. Engineer officer in charge; under whose very efficient administration nearly all the work tending to its improvement, has been done.

is a beautiful expanse of water, and, all things considered, the finest harbor on the Gulf of Mexico. It took its name from the **Mobile** Indians, who once lived upon its salubrious shores.* It has all the essentials of a good harbor, except great depth, and that can readily be obtained at, comparatively, little cost. The bay is nearly land-locked, and its **Lower Anchorage**, twenty-seven miles† south of the wharves at the city of Mobile, with an area of from ten to twelve square miles and an average depth of twenty-two feet,‡ affords a safe and capacious roadstead for vessels of that draught. It is not subject to tornadoes, and, in it, no vessel was ever lost by storm. For the past thirty years, but one vessel has been dismasted in Mobile Bay, and that was by a water spout. Vessels seldom drag their anchors in it, owing to its fine holding ground, and but few have ever been blown ashore.

The length of the Bay, from its mouth to the city wharves, is thirty miles. Its width, immediately at its entrance from the Gulf, three and a quarter miles. At its **Lower Anchorage**, it is from twenty to twenty-two miles wide, and at its Northern extremity not more than eight and a half.

From the **Lower Anchorage**, north, the water shoals, until, at a distance of six miles, it is not deeper than thirteen feet. Proceeding north, for the next eleven miles and until the bar at the Mouth of Dog River, on the western side of the Bay, known as **Dog River Bar** is reached, there is a good natural channel of twelve and a half feet depth. On this bar, and **Choctaw Pass Bar**, immediately at the mouth of Mobile river, the natural depth of the water, in the shoalest part, did not exceed eight feet; but the Government of the United States has just completed by steam dredging, and at a cost of \$300,000, a channel over these two bars and to the city, of thirteen feet depth, and from two hundred to three hundred feet in width. Vessels, therefore, drawing not more than twelve and a half feet can now pass up, without difficulty, to the wharves of Mobile city; but those of greater draught are still compelled to lie considerably lower in the bay, while **The Fleet**, of heavy cotton and timber ships, lies at the **Lower Anchorage**.

This dredged channel, from the mouth of Dog River, is staked at points with stakes, distinctly visible in the day, and surmounted at night with lanterns.

* See *ante*, p. 5, *note*.

† Wherever *miles* is used in connection with any of the water lines of Alabama, *statute miles* are meant.

‡ The depths in the bay are all given at mean low tide.

The River and Harbor Bill for 1878, appropriated \$10,000, for a proper survey of the Bay, with a view of determining the feasibility and cost of deepening this already dredged channel to twenty-two feet, and continuing it, at that depth, to the Lower Anchorage. This survey is now in progress, and will be completed, and a Report made before the assembling of Congress, in December, 1878. It is believed that \$1,500,000 will give such a channel, and that Congress will, at its next session, begin the appropriations, when the work will be promptly inaugurated. With deep water to the city wharves, the removal of the obstructions in the Coosa and Black Warrior rivers, and the completion of the Mobile and Alabama Grand Trunk Railway from Mobile city to Birmingham, Alabama, Mobile Bay, besides affording the finest facilities for exporting and importing other products, will become a great outlet for the iron and other mineral treasures of Northern Alabama, and the coaling station for the Gulf Marine.

The entrance to Mobile Bay is defended by **Fort Morgan**, on Mobile Point, and **Fort Gaines**, on Dauphin Island—the distance across being three and a quarter miles, but the channel through which an enemy's vessel, entering the Bay, would have to pass, is within less than half a mile of the heavy guns of Fort Morgan. There is a **Light House** on Mobile Point, and another on Sand Island, three and a quarter miles further south, in the Gulf; and the United States Light House Service for the Eighth District, comprising this portion of the Gulf Coast, has its Engineer Headquarters at Mobile. The **Mobile Break-water**, an extensive work for loading and unloading vessels, is located at the Lower Anchorage.

MOBILE RIVER. *

Proceeding north from Mobile Bay, the second of Alabama's great water lines, is **Mobile River**; formed by the junction of the Alabama and Tombigbee rivers, about fifty miles north of the city of Mobile, where begins the Delta of the Bay.† This broad, deep, and short river, has, now, depth and width sufficient for all commercial purposes ever likely to be required of it, and over it, without difficulty, passes, at present, the entire traffic of the Alabama, Tombigbee, Little (or Upper) Tombigbee, and Black War-

* For Landings on the Mobile River, with their distances from Mobile, see APPENDIX.

† The distances on the rivers of Alabama, unless otherwise noted, are given as they run, that is, according to *steamboat* measurement. They have been obtained by careful examination of all accessible written and printed *data*, and by consultation with the best informed pilots, and will be found sufficiently accurate for all general purposes.

rior, rivers. When the Coosa river obstructions are removed, the commerce of that great water line, from Rome, Georgia, and above, will also seek its natural outlet over this stream; and if the Gunterstown and Gadsden Canal, connecting the waters of the Coosa and Tennessee rivers, is ever completed, the immense trade of the latter great river will, likewise, be directed this way.

Mobile river bounds, in a measure, the counties of Mobile and Baldwin, and sweeping by the city of Mobile, empties into the Bay of Mobile, just below the city.

ALABAMA RIVER. *

This river, considering its length, and, to the State, economic value, is the greatest of the rivers of Alabama, and from it, as has been seen,† the State derived its name. Formed by the confluence of the Coosa and Tallapoosa rivers, a little southeast of the centre of the State, the **Alabama** pursues its sinuous course along the loose, sandy, *strata* that underlie the rotten limestone of the counties of Elmore, Montgomery, Autauga, Lowndes, Dallas, Wilcox, Monroe, Clarke, and Baldwin, until it finally mingles its waters with those of the Tombigbee,‡ about fifty miles above the city of Mobile, and makes the Mobile river. From the confluence of the Coosa and Tallapoosa, to its own confluence with the Tombigbee, the Alabama is, by United States survey, 312 miles in length; but the steamboat measurement makes it 420. The Alabama has an average width§ of from 200 to 300 yards through its entire length, and a depth to Claiborne, in Monroe county, 146 miles from Mobile city, of from six to seven feet; from Claiborne to Montgomery, the depth varies from three to five feet. No effort beyond a partial survey and examination, has, so far, been made to improve the navigation of the Alabama, and it has been left to take care of itself; but, notwithstanding this neglect, by both the State and general Government, it continues navigable all the year from mouth to source, for steamers of not exceeding three feet draught, and during the late fall, and winter months for those of any draught. The obstructions to very low water navigation on the Alabama, are such as are common to all

*For landings on the Alabama river, with their distances from Mobile, see APPENDIX.

† *Ante*. p. 1.

‡ Prof. Toumey says: The convergence of the Alabama toward the Tombigbee, is the result of that dynamical law, "a body in motion will follow the line of least resistance."

§ The width and depths in this river, and the other water lines of Alabama, are given at low water.

our rivers, below the falls, resulting from abrupt bends, sudden widening causing the formation of sand and gravel bars, submerged logs which have floated in, over-hanging timber, and now and then the sunken wreck of a steamer, or other water craft. The examination alluded to, and which was made by Assistant Engineer G. B. Yuille, under the direction of Major A. N. Dammrell, the United States Engineer officer in charge of this department, gave results from which it is estimated that it will require \$229,741, to remove these obstructions and give a low water channel, all the year, from Mobile to Wetumpka, 4 feet deep, and 200 feet wide; or \$759,773 for such a channel 6 feet deep, and 150 feet wide. A channel of the first dimensions will be amply sufficient for all present purposes. The River and Harbor Bill for 1878, appropriated \$25,000 for the improvement of the Alabama, and it is confidently believed that the appropriations will be annually increased hereafter until the whole work is completed.

Eight of the nine counties bordering the Alabama, viz: Elmore, Montgomery, Autauga, Lowndes, Dallas, Wilcox, Monroe, and Clarke, are among the finest agricultural counties of the State, containing a large area of cotton and corn producing land, not excelled in the South. The agricultural capabilities of the alluvial bottoms of these counties, along the Alabama river especially, are very great, and food and raiment spring here almost spontaneously. The county of Baldwin, though not so well adapted to agricultural purposes, produces in its immense forests of pine, great quantities of fine rosin, and turpentine, besides affording excellent pasturage for sheep raising, and wool growing.

The timber along, or accessible by, the Alabama river, is very heavy, and, owing to its great variety and superior quality, very valuable.

On or contiguous to the Alabama, are many important cities and towns, to which the river affords commercial facilities.

Steamers rarely fail to ascend the Alabama, regularly, all the year from Mobile to Montgomery. During the season of 1877-78, Mobile received by the steamers of the Alabama river 52,424 bales of cotton; and it is estimated that, but for low water, not less than 20,000 bales more, which were diverted by rail to the Atlantic seaboard, would have sought a market in Mobile. This alone will show the vital importance to Mobile and the State generally, of the early improvement of this great water line. The

Principal Landings on the Alabama are, Claiborne, Cahaba, Selma, Benton, Montgomery, and Wetumpka (on the Coosa).

TOMBIGBEE RIVER.* †

This is the next‡ in the scale of the great rivers of Alabama, and it is formed by the confluence of the Little (or Upper) Tombigbee, and Black Warrior rivers, in the northern edge of Marengo county, Alabama, about three-quarters of a mile above the city of Demopolis. Flowing southwardly, it waters and affords fine commercial facilities to large portions of the counties of Marengo, Sumpter, Choctaw, Clarke, and Washington, until, uniting with the Alabama 243 miles south of Demopolis, and 50 north of Mobile city, it contributes to make the Mobile river.

The Tombigbee, like its great neighbor, the Alabama, has hitherto received but little attention from any source; but the River and Harbor Bill, for 1878, appropriated \$28,000, to be expended partly in improving it, and partly in improving the Black Warrior, one of its feeders. The Tombigbee is navigable all the year, throughout its entire length—in the low water season for steamers of not exceeding two and a half or three feet draught; and during the late fall, and the winter and spring months, for those of any draught. Like the Alabama and other navigable rivers of the State, the obstructions to very low water navigation on the Tombigbee, are the result of abrupt bends, sudden widening causing bars, overhanging timber, sunken logs, and wrecks, all of which are easily and inexpensively removable; and it is thought the appropriation already secured to that end, will result in much good. The worst obstructions to its navigation in low water, are between Bladon Springs and Demopolis, a distance of 99 miles, and it is estimated that it will require a total of about \$21,000 for the work on that part of the river. The lands along this river are noted for their great productiveness, while the heavy and varied timber skirting, and contiguous to it, is of the very best quality. Steamers ply regularly, winter and summer, on the Tombigbee, between Mobile and Demopolis. The number of bales of cotton passing over the Tombigbee and Little Tombigbee, and seeking a market at Mobile, during the season of 1877-78, was 79,259.

* Name a corruption of *Etomba-Igaby*, which signified *Box-Maker's Creek*, and was the Indian appellation of a creek which flows into the river at Jones' Bluff, and from which the river took its name. The creek was so-called from the fact, that an old coffin or cabinet maker lived on its bank, at Jones' Bluff.†

† For landings on the Tombigbee, with their distances from Mobile, see APPENDIX.

‡ It may be objected that the Tennessee river ranks next after the Alabama; but, ested by present utility to the State, the Tombigbee is really next in value.

The principal landings on the Tombigbee, are, St. Stephens, Midway (the landing for Bladon Springs), Tusahoma, and Demopolis.

LITTLE (OR UPPER) TOMBIGBEE RIVER.*

This is one of the feeders of the Tombigbee, and might well be considered but its upper end. The **Little Tombigbee** has its source high up in North-eastern Mississippi, and its waters, seeking their natural outlet in the Gulf of Mexico, flow southwardly, and enter the State of Alabama over the western boundary line of Pickens County. The principal Mississippi cities on its banks are Columbus, and Aberdeen, both of which are closely connected, commercially, by means of this river, with the city of Mobile. The Little Tombigbee waters and, during about seven months of the year, affords commercial facilities to three very superior agricultural counties of Alabama—Pickens, Greene, and Sumpter; besides a number of Mississippi counties which trade with Mobile. This river is, also, obstructed in very low water by sand and gravel bars, sunken logs, snags, etc. About \$10,000, appropriated by Congress, have already been expended in its improvement, partly in Alabama and partly in Mississippi, with good effect. An estimate, based on official figures, gives \$56,500 as the amount required to improve the Little Tombigbee from its mouth to Fulton, in the State of Mississippi. Another estimate makes the total sum required only \$50,000, as follows, \$35,000 to remove the obstructions between Fulton and Columbus, Mississippi, and \$15,000 to remove those between Columbus, Mississippi and Pickensville, Alabama. It is, also, estimated that there are not less than 60,000 bales of cotton grown annually above Pickensville, which, with a proper improvement of the Little Tombigbee, would seek a market at Mobile, but which are now diverted by reason of these obstructions in low water.

The River and Harbor Bill, for 1878, appropriated \$12,000 for the improvement of the Little Tombigbee.

The distance from Demopolis to Pickensville, by this river, is 138 miles; to Columbus, 177 miles; to Cotton Gin Port, 237 miles; to Fulton, 320 miles. From Demopolis to Mobile, the distance is 243 miles. There is, therefore, a total possible navigation all the year round, *via* this and the Tombigbee river, from Mobile, Alabama, to Fulton, Mississippi, a distance of 563 miles.

* For Landings on the Little Tombigbee, with their distances from Mobile, see APPENDIX.

BLACK WARRIOR RIVER.* †

This is another, and destined in time to become the most important, feeder of the Tombigbee. The Black Warrior is formed by the confluence of two forks—Locust, and Mulberry, which have their sources far up in the northern part of Alabama, extending over a wide area of country. Flowing southwestwardly, and gradually approaching each other, these two forks unite on the dividing line between Walker and Jefferson counties, and make the Black Warrior. Thence, the Warrior continues in the same general course for about 50 miles further, and until it reaches the city of Tuscaloosa, whence its course is more southerly, through or along the counties of Tuscaloosa, Greene, and Hale, until it unites with the Little (or Upper) Tombigbee, 170 miles below Tuscaloosa, and makes the Tombigbee.

Prof. Toumey, late State Geologist, in speaking of this river, says:

It will be seen at a glance on the map how completely the upper Warrior conforms to the Warrior coal field. Rising on the verge of the Tennessee, it runs rapidly over the coal measures of the basin, which it drains. The fall of the Warrior between its source and Tuscaloosa is nearly 1,000 feet, or 5 feet to the mile, and between the latter place and Mobile, the rivers that unite with the Warrior have a fall of only 161 feet, or 5 inches a mile. It is for this reason that the Warrior river rises, during floods, to the height of 50 feet at Tuscaloosa; the water being suddenly checked and unable to escape with the rapidity of the rest of its course, accumulates as it reaches Tuscaloosa.

Above Tuscaloosa, the Warrior is not navigable for steamers, owing to rocks, rapids, and other, at present, dangerous and impassable impediments; and even below, its navigation is totally suspended in low water, by obstructions similar to those in the Alabama, and Tombigbee—that is, abrupt bends, sand and gravel bars, submerged and over-hanging timber, etc. During the high water season, steamers of any draught ascend the Warrior regularly from its mouth to Tuscaloosa. Besides the city of Tuscaloosa, the principal landings on this river, are Candy's, East Port, Finche's Ferry, and North Port, immediately opposite Tuscaloosa.

Above Tuscaloosa, in juxtaposition with this river, lie the immense Warrior Coal Measures, to reach and develop which, is one of the great works of internal improvement now receiving the attention of the people of Alabama. These fields have an extended area, and are almost inexhaustible; while the coal dug from them is of a superior quality.

* In the language of the Choctaws, this river was known as the *Tuscaloosee*, from two Choctaw words, *Tusca* warrior, and *Loosee*, black.

† For Landings on the Warrior, with their distances from Mobile, see APPENDIX.

The following extract from a letter of Col. Horace Harding, the Engineer Officer in charge, under date of May 3d, 1878, and written in reply to one making inquiries, will show what has been done in the way of improving the Black Warrior, what remains to be done, and the valuable results to the State of Alabama to follow its proper improvement:

A survey of the Warrior River was made in the autumn of 1874, from which it was estimated, that to secure a low-water channel between Demopolis and Tuskaloosa, of not less than four feet in depth by eighty in width, would require an expenditure of \$151,000. Of this amount, there has been appropriated the sum of \$40,000, viz: \$25,000 on March 3, 1875, and \$15,000 on August 14, 1876. These appropriations have been nearly expended, during the working seasons of 1875-76-77. The work accomplished, has been the improvement, more or less complete, of over 30 bars, between Tuskaloosa and Finche's Ferry, and the removal of some 1,800 snags, between Tuskaloosa and Demopolis. There remain in the Warrior, some 60 bars to improve and about 500 snags to take out, to accomplish which the balance of the original estimate will doubtless prove ample. There remains, also, a considerable amount of work to be done on the Bigbee, between Demopolis and Bladon Springs, the cost of which has heretofore been estimated at about \$21,000.

During the past season (the rivers rising in September), over 100,000 bales of cotton have been taken down the Warrior and Bigbee to Mobile. The year before (with low water until January), only 50,000 bales were shipped by these rivers. The freight on the 100,000 bales shipped the past season, ranged from fifty cents to one dollar per bale, and, probably, did not exceed in the aggregate, \$75,000. The freight on a like number of bales the year before (one-half having to pay the higher railroad rates of \$2.00 and \$2.50 per bale) probably amounted to \$150,000. From this, it appears, that the river navigable throughout the cotton season, effects a saving as compared with the river not boatable until January, of \$75,000 in down freights. There must be, also, a large saving in up freights, so that it is safe to assume that with the river made navigable throughout the year, the whole cost of the contemplated improvement might be re-imbursed to the community by the reduced charges on two years business.

The effect of the river improvement upon the Mobile coal trade cannot fail to be of vast importance—in fact it will render it easy for Mobile to become one of the chief coaling stations on the Continent. I have had occasion to examine quite minutely into the cost of mining and transporting the Warrior coal, and from all the facts and *data* that I have been able to gather, I am satisfied that, with a navigable river, coal can be delivered in Mobile Bay at a *total cost* of not exceeding \$2.00 per ton. I feel the more confident that I have not under-estimated in this case, from the fact that coal in barges from the Kanawha river of Virginia was *selling* in Cincinnati, one month ago, at \$1.75 per ton afloat. The price of coal, free on board, in Philadelphia and Baltimore, is, at present, about \$3.50 per ton, with little or no profit to the capital invested

in the business. At this latter price in Mobile, however, there would be a clear profit of over \$1.00 per ton.

With the river, below Tuskaloosa, improved so as to be navigable for tugs and barges, the cost of inaugurating a coal business would be moderate. From 40,000 to 50,000 tons per annum could be mined and transported on an investment of \$60,000, and with \$1.00 per ton profit on coal, dividends would be from 60 to 70 per cent. The business would increase with the capital, and in a faster ratio, and I estimate, approximately, that 1,000,000 tons, annually, could be handled on an investment of \$600,000. That Mobile may do a coal business of this magnitude within a few years, will not be thought an extravagant supposition, when it is remembered that Pittsburg, alone, uses and ships 9,000,000 tons per annum.

The River and Harbor Bill, for 1878, appropriated \$28,000* for the improvement of the Black Warrior and Tombigbee rivers.

CAHABA RIVER.

Emptying into the Alabama, 289 miles above Mobile, and 19 below Selma, is the Cahaba river, which takes its rise far back among the hills and mineral regions of Alabama, in or near the county of St. Clair, and flows down through the great coal and iron counties of Shelby and Bibb, and the rich agricultural counties of Perry and Dallas. The Cahaba, is, now, scarcely navigable at all for boats of any kind, though within 30 years last past, steamboats have ascended from its mouth to the town of Centreville, in Bibb county, distant 80 miles. An official survey and examination of the Cahaba, from its mouth to Centreville, has been made, from which it is estimated, that the cost of improving that portion of the river, so as to make it navigable for coal and other flat boats, would be about \$40,000; or \$195,000 to give a steamboat channel three feet deep at all seasons. There are three bridges spanning this part of the river which it will be necessary to alter before there can be any navigation of it, and the figures given above are based upon having these bridges altered at the expense of the individuals or corporations owning or controlling them. On the lands below Centreville, and contiguous to the Cahaba, about 30,000 bales of cotton are grown annually, which, at present, go elsewhere, but which would be marketed in Mobile by way of this river, if it was properly improved.

At Centreville, and above, the bed of the Cahaba is composed of hard rock, removable only at great expense. Above Centreville, a short distance, lie the extensive coal and iron deposits of the Cahaba fields, a source of immense, but as yet undeveloped

* This, of course, is in addition to the \$40,000 heretofore appropriated, and mentioned in Col. Harding's letter.

wealth. Could the river be utilized in the transportation of these mineral treasures, they would add vastly to the resources of the State of Alabama. No survey of the Cahaba, above Centreville, has been made, and there is, therefore, no reliable *data*, from which to estimate the cost of improving that portion of it. It seems practicable, however, to reach these fields by a lock and dam improvement of the river, from Centreville up, at a cost of about \$500,000.

COOSA RIVER.*

This beautiful river, whose fertile valley so attracted DeSoto in his famous pilgrimage through Alabama, in 1540, that, after his disastrous battle at *Maubila*, he entertained the idea of returning to and colonizing it, is formed by the junction of the Oostanaula and Etowah rivers, at Rome, in Northwestern Georgia. Thence flowing in a tortuous, but generally southwest course, for about one hundred miles, and entering the State of Alabama over the eastern boundary of Cherokee county, it bends gradually to the south, and east of south, through or along the Alabama counties of Cherokee, Etowah, St. Clair, Calhoun, Talladega, Shelby, Baker, Coosa, and Elmore, until it reaches Wetumpka, in the last, whence its direction is southwest, until it joins the Tallapoosa, and makes the Alabama river, 334 miles below Rome. The waters of the Coosa are thence continued southward through the channels of the Alabama and Mobile rivers, 420 miles further, until they empty into the Bay of Mobile—making the total distance from Rome, Georgia, to Mobile, Alabama, by the way of these rivers, 754 miles. The rivers that form the Coosa, or rather the tributaries of those rivers, rise in the basin between the southern extremities of the Blue Ridge, and Alleghenies, in Northwestern Georgia. The Oostanaula, the main tributary of the Coosa, is navigable and navigated by steamers of light draught throughout its entire length, and to a point on the Coosawattee, one of its tributaries, 100 miles above Rome. From Rome, southward, as far as Greensport, in St. Clair county, Alabama, a distance of 180 miles, the Coosa is navigable and navigated by light draught steamers, carrying the United States Mail, and making, each, two round trips a week. From Greensport to Wetumpka, distant 137 miles still further to the south, the Coosa is entirely closed to navigation. From Wetumpka to the confluence of the river with the Tallapoosa, it is navigable. It will thus be seen, that (as the Alabama is always navigable throughout its

* Name derived from the Coosa Indians, once located on its banks.

length (with the exception of the 137 miles of the Coosa between Greensport and Wetumpka) there is continuous navigation, *via* the Coosawattee, Oostanaula, Coosa, Alabama, and Mobile rivers, from Rome, Georgia, to Mobile, Alabama, a distance of 854 miles, and draining more than 28,000 square miles of territory in Georgia, and Alabama, unsurpassed in richness of soil, and mineral wealth. To improve the Coosa and render it navigable throughout, thereby making it a most important factor in the grand future development of Alabama, is another of the many great works of internal improvement in this State, now attracting and receiving attention.

Prof. Toumey, late State Geologist, treating of the Coosa, in his Report on the Geological formations of the State, said :

The Coosa, from its rise to Greensport, in Cherokee county, flows along the strike of the rocks, and in a valley between the *strata*: it meets with scarcely any obstruction, and hence the remarkable phenomenon which it presents of a river navigable for steamboats at both extremities, with the intermediate part an impracticable rapid. It will be seen, that between the places just named, the course of the river is northeast and southwest: at Greensport, it turns directly south, and consequently crosses the edge of the *strata*, so that where these are hard and indestructible, rapids occur; but where limestone *strata* are crossed, a level reach is found. This state of things continues for a distance of 180 miles to Wetumpka, where the mica slates of the metamorphic rocks form the first obstruction and head of navigation.

* * * * *

Between Wetumpka and the mouth of the Tallapoosa, the Coosa is a beautiful river, with high banks and deep water. At the junction, an accumulation of gravel takes place, which is the result of the lessening suddenly of the transporting force of the two rivers, by which the materials rolled onward by the streams are arrested in their progress, producing a bar and serious obstruction to navigation, which can only be remedied by the removal of the cause—that is, by making the streams to come together at a more favorable angle. The obstructions below this are such as are common to all our rivers below the falls, resulting from abrupt bends, sudden widening, submerged logs, overhanging timber, etc.

An official survey and examination of this river, with a view to estimating the probable cost of its improvement, was made in 1870,* under the direction of Maj. Walter McFarland, United States Engineer Corps.

From this survey and other sources of information, the following *data* has been obtained: The volume of water in the Coosa is ample, at all times, to give a channel of sufficient width and depth for steamers of from 150 to 300 tons burden. The

* See printed Report of the U. S. Chief of Engineers, for 1872, pp. 502-507.

river is an exceptionally favorable one for improvement, since its mean depth is greater in comparison with its average width than most of the Western rivers, and its banks and channels are generally well defined and permanent. Sand and gravel bars are seldom found, and, when found, easily removed. From Rome to Greensport, the average width of the river is 500 feet in low water, and its average depth two feet, in the same water, in the most shallow places. Between Rome and Greensport, there are thirteen shoals, some of which have been so far improved, under Congressional appropriations, as to permit the passage of steamers with little or no difficulty; others, though passable by steamers, require more work to remove dangerous rocks, and, by excavations to give more directness to the channel. In some places, wing or spur dams are needed, to confine a greater volume of water to the channel, and thus deepen it. The work, already done upon this part of the river, has proven very satisfactory, and it is believed that during the year 1878, the river will be freed entirely of obstructions between Rome and Greensport, and a channel obtained of, at least, an average depth of from two and one-half to three feet, and of sufficient width, all the year. From Greensport to Wetumpka, the river is broken up into pools or eddies of navigable water, separated by reefs, shoals, and rapids, sometimes of very great extent, absolutely impassable at low water, and dangerous in the best stages by reason of the crookedness of the channel ways and the ragged rocks everywhere to be found along their borders, and in mid-stream, reaching to the surface even where the water is forty or fifty feet deep. The navigable water found between Greensport and Wetumpka is broken up into stretches, varying in length from 600 yards to 6 miles, and varying in depth from 6 to 60 feet. The intervening shoals vary from single reefs a few yards long in the direction of the current, and extending from bank to bank, to long series of shoals from a thousand yards to 12 miles in length. These obstructions consist almost entirely of rock, very little gravel being found. The average width of the river between Greensport and Wetumpka is from 800 to 1,000 feet.

Major McFarland estimated the total cost of improving the river, so as to make it navigable between Greensport and Wetumpka, all the year, for vessels of three feet draught, at \$2,340,-746.75—seemingly formidable figures, but really insignificant, compared with the great results to follow. Besides, this estimate was made in 1870, eight years ago, when labor of all kinds was, at least, 50 per cent. higher than now.

The general system of improvement recommended by Major McFarland, consists in the formation of slack water navigation over the rapids, by the construction of dams and locks, with one or two short stretches of canal where needed, and the removal from the channel ways of dangerous and inconvenient rocks.

To improve the Coosa, Congress, in 1876, appropriated \$30,000, the greater portion of which has, already, been expended in improving the part between Rome and Greensport; and the River and Harbor Bill, for 1878, appropriated an additional sum of \$75,000, to be used on the same portion of the line.

Col. D. S. Printup, of Rome, Georgia, an accomplished gentleman, and one who has carefully and laboriously investigated the question of the opening of the Coosa, and the results to follow, in a recent address, before the House Committee on Commerce, said on this subject :

The country that would be materially and beneficially affected by the proper opening of this great river line by the removal of the obstructions between Greensport and Wetumpka, being a distance of only 137 miles out of the 815 and upward, now navigable, is that portion of Northwest Georgia lying between the Lookout Mountain on the Northwest, and the line of hills or mountains, embracing the gold belt, on the Southeast, traversed by the valleys of the Chattooga, Conasauga, Coosawattee, Oostanaula and Etowah rivers, and Big Cedar Creek, and their tributaries, all whose waters help to form the Coosa, embracing a population of over 175,000, and an area of at least 6,000 square miles, or 3,840,000 acres of land, which for its productiveness of soil and mineral resources is unsurpassed by any other region of the same extent in the United States; producing cotton of the finest grade for uplands, as well as the cereals, tobacco, and all kinds of fruits. For the production of the latter, the hills and mountains seem peculiarly adapted. Being also rich in coal, iron, manganese, barytes, and other minerals.

That portion of Northeast Alabama that would be more or less, greatly benefitted by the improvement of the Coosa river as suggested, is bordered by Raccoon mountain on the Northwest, and the range of hills or low mountains running parallel with, and distant from the line of the river about 35 miles, on the Southeast; having a general direction from the Northeast to the Southwest and in Alabama, containing a population of about 100,000 upon an area of about 7,000 square miles or 4,480,000 acres of land; not taking into this account any portion of the country on either side of the line, traversed by the lower half, or near 400 miles of the river. This section of Alabama is, in richness of soil and mineral wealth, equal to that in Northwest Georgia; partaking much of the same nature, besides having extensive and inexhaustible fields of bituminous coal, from two to ten feet thick, of the very finest quality, and suited to all purposes of manufacturing iron, driving machinery, and other uses to which this coal is applicable. The coal fields traverse the whole area in Alabama above described and are imme-

diately by the side of extensive beds of iron ore of several varieties and finest qualities, which traverse the same area of country with the coal fields. Sandstone, limestone, fireclay, and other minerals, abound in quantities sufficient to supply all future ages.

From a statistical calculation, it is shown that the annual products of these portions of the States of Georgia and Alabama, embraced in the area of country above described, which would be beneficially affected by the improvement of the Coosa river, are over 2,125,000 bushels of wheat, 3,500,000 bushels of corn, 250,000 bushels of oats, and over 100,000 bales of cotton; besides live-stock, fruits of various varieties, and other products of the farm, in value equaling over \$10,000,000. This is not taking into consideration, the products of the mines, such as iron and coal, etc., nor the manufactured articles annually produced, which are very large and extensive.

The annual saving to the people along the line of river in having cheap transportation for their surplus products would, naturally, enhance the wealth and prosperity of the country. For want of this great thoroughfare, millions of dollars worth of the best long leaf pine, a great variety of oak, ash, walnut, cedar, cypress, and poplar, which could be turned into the best lumber, are now reduced to ashes or rot upon the ground. Of the lands along the line of this river, the United States owns millions of acres, in the shape of public lands. The manufacturing interests would, in like manner, be fostered and made prosperous.

The Chief Engineer of the Selma, Rome, and Dalton Railroad, in his report for 1870, incorporated in the report of the United States Chief of Engineers for 1872, treating of the improvement of the Coosa, says:

The wonder is, that this work has not been accomplished a long time ago. Indeed, what channel of transportation is better calculated to spread all around, industry, prosperity, and wealth.

The Report of this Engineer continues:

Capital and cheap transportation, only, are wanted to make this section of the country an immense workshop, capable of giving employment to thousands of mechanics and workmen, and turning out every year millions of dollars worth of products of all descriptions.

On the immediate banks of the river, are found heavy and inexhaustible beds of iron ore and all the material necessary for its manufacture—coal, limestone, and fire-proof stone, in the greatest abundance.

Judging from the experience of every country under similar circumstances, what an immense economical revolution this new channel of communication (with *through* transportation once opened) must produce in the country at large, and, particularly, in the States of Georgia and Alabama, and those immediately contiguous thereto.

The climate of the Coosa valley is salubrious, mild, and temperate; its winters of short duration; its soil rich and productive; besides the staples, everything in abundance, which is necessary to make living cheap for workman, laborer, and mechanic.

This great valley is intersected by a large number of streams which

never freeze, and on them are a multitude of sites for mills, and factories, with inexhaustible water power, and are destined one day to be the customers and feeders of this great channel.

The Report goes on to say :

It is almost impossible to estimate the increase in the value of these lands, which will be the natural and immediate result of opening the river to navigation. It is fair to suppose, however, that the increase will be many times greater than the amount necessary to pay for all the required improvements.

Prof. Toumey said of the Coosa, in this connection :

The navigation of a river, passing through such a country as that through which the Coosa passes, appears to me so important a matter in connection with the prosperity of the State, that its improvement should enter into any scheme of internal improvement devised for its best interests.

The removal of the obstructions between Greensport and Wetumpka, would permit steamers, from Mobile, to ascend regularly, *via* the Mobile, Alabama, and Coosa rivers, to Rome, Georgia, a distance of 734 miles; while the Oostanaula and its tributary, the Coosawattee, would afford them still further navigation for a distance of 100 miles above Rome; thus placing an immense area in Alabama and Georgia in immediate communication with the Gulf of Mexico, and opening up water communication with the extensive coal fields and iron beds of the Coosa valley.

TENNESSEE RIVER.* †

This river rises in the southwestern part of the State of Virginia, and flows southwesterly, in a general direction, 280 miles, to Knoxville, Tennessee; thence, in the same general direction, 60 miles, to Loudon, Tennessee. At this point, it turns at right angles and flows northwesterly, cutting through several subordinate ridges, 24 miles, to Kingston, Tennessee, where it unites with the Clinch river, one of its principal tributaries. At Kingston, the river turns abruptly and runs southwesterly, 110 miles, to the city of Chattanooga, Tennessee. Here, it makes another abrupt turn and flows 19 miles, northwesterly, through the eastern arm of the Cumberland Mountains, to the *Boiling Pot*,

* *Tennessee* is said to be an Indian word, meaning *Great Bend*—not an inappropriate name for the river bearing it.

† The description of the Tennessee river is taken almost literally from the admirably drawn Memorial on behalf of the removal of the Muscle Shoals Obstructions, presented for the information of the Government of the United States, by the Commercial Convention held at Chattanooga, Tennessee, December 5, 1877—the author having done little more than adapt it to the requirements of this manual.

formerly an obstruction, but now removed. At this point, the river makes a sharp deflection and flows in a tortuous southwesterly direction, 41 miles, to Bridgeport, Alabama; thence, in a uniform southwesterly course, curving slightly to the westward, 74 miles, to Guntersville, Alabama. Here, it turns at right angles and flows northwesterly, gently curving to the northward, 51 miles, to Decatur, Alabama; thence, in the same course, 10 miles, to Brown's Ferry, the head of the Muscle Shoals group of obstructions; thence, in the same general direction, 38 miles, to the foot of Muscle Shoals, one mile above Florence, Alabama; thence, 34 miles, to Waterloo, Alabama. Here, the river turns gradually and flows northerly, 296 miles, and empties into the Ohio, at Paducah, Kentucky; making a total distance from source to mouth, of 1,037 miles.*

The annual volume of water in the Tennessee is equal to that of the Ohio; and its average width from Knoxville to Paducah, is 500 yards. Its average depth is fully three feet from Knoxville to the head of Muscle Shoals, for nine months annually; and its average depth from Florence to Paducah is fully three feet, the year round. Its banks are high and permanent, and its channel stable and unchangeable. For nearly three-fourths of its length, it flows through silurian and carboniferous formations, therefore, sand and gravel bars are very rarely found. The boatmen who learned its channel forty years ago, have learned nothing new, since. In consideration of these general characteristics, length, width, depth, volume, permanence of channel, and number of miles of natural navigation, the Tennessee ranks sixth in magnitude among the rivers of the North American continent. It was adopted, in 1874, by the Senate Committee on Transportation, from Paducah to Guntersville, as one of the great water lines of the country. It flows through five great States, and binds together all by the ligaments of commerce; and the work of its improvement, therefore, can be no less national in character, than that which guards against national foes.

From Paducah to Florence, there is no serious impediment to navigation, as steamboats, of from four to five feet draught, are plying regularly between these points, the year round. From the Head of Muscle Shoals, steamboats of three feet draught are navigating to Knoxville nearly the entire year. Navigation is not, however, restricted above Knoxville. For five months in the year, boats of light draught ascend 125 miles above Knoxville on the Upper Tennessee, 55 miles up the Little Tennessee, 150 miles

* The anomalous course of the Tennessee cannot fail to be remarked.

up the Clinch, 40 miles up the Hiwassee, 75 miles up the French Broad, and 50 miles up Powels river, making 395 miles of tributary navigation.

Between Brown's Ferry, 10 miles below Decatur, and Florence, a distance of 38 miles, is a group of impediments to navigation, commonly known as the Muscle Shoals, consisting of Elk River, Big Muscle, and Little Muscle Shoals, separated by deep interval pools of navigable water. This section of the river is underlaid by very hard siliceous rocks. This quality has enabled them to resist the abrasion of the water, and has compelled the river to expand suddenly from 1,500 feet to one, two, and three miles in width, to accommodate its maximum flow. Over these obstructions, navigation is absolutely impracticable, except in seasons of flood, and then only for a few days in the year. Hence, there is no outlet, by an union of northern and western rivers, for the commerce on these upper 1,004 miles of natural navigation, upon streams whose drainage area is equal to 54,000 square miles; and what should have, long since, been one of the main commercial highways is still throttled at Muscle Shoals.

These shoals consist of three parts, separated by intervals of navigable water, as follows, beginning at Florence :

Little Muscle Shoals, 5 miles long, and fall of 23 feet.

One and one-half miles of deep water at Bainbridge Ferry.

Big Muscle Shoals. $14\frac{1}{2}$ miles long, and 84.6 feet fall.

Five miles of deep water at Lamb's Ferry.

Elk River Shoals, about 9 miles long, and a fall of 26 feet.

The remainder of the distance to Brown's Ferry, and in fact from thence to Chattanooga, and Knoxville, a distance of 350 miles, is now navigable by steamers, although certain improvements are contemplated at different points along this part of the river, to give still better navigation.

The Tennessee River, especially the section crossing Muscle Shoals, has been repeatedly and carefully surveyed, with a view to its improvement, under authority of Congress, by Boards of United States Engineers, in 1828, 1830, and 1831; by Col. S. H. Long, United States Topographical Engineer, in 1830; by Col. James Kearney, United States Engineer, in 1835; by Col. Wm. B. Gaw, Civil Engineer, under the direction of Brevet Major-General G. Weitzel, Major United States Engineers, in 1867. The estimates of the Engineers for overcoming the Muscle Shoals obstructions, vary from \$1,500,000 in the early reports, to \$3,944,967 in Gaw's report to Weitzel, which contemplated more extensive improvements, better adapted to the increased developments of

the country, than the former estimates. Walter McFarland, Major of United States Engineers, in charge of the Tennessee River improvement in 1872, made a careful survey of the Muscle Shoals group of obstructions, and arrived at a conclusion, as follows: "The scheme proposed by the Board of Internal Improvements, 1831, cannot be improved upon, for the passage of the Muscle Shoals; and the work now remaining to be done, in order to carry it out, is to put the old canal in good condition, to construct the canals around Elk River Shoals and Little Muscle Shoals, together with the basins proposed for connecting them with the South shore." He estimates the entire cost to be from \$2,128,500 to \$3,676,000, according to the width and depth of the canal and width and length of the lock chambers. The latter amount is the estimate for the trunk of a canal 100 feet wide at the surface, 6 feet deep, and locks 60 feet wide, by 300 feet between the mitre sills.

The improvement consists in enlarging and repairing the old canal, which was built about forty years ago, and which failed and fell into disuse, because it could not be approached in low water from either direction, on account of Elk River Shoals above, and Little Muscle Shoals below. The present plan of improvement, includes the improvement of these shoals, as well as Big Muscle Shoals, the latter being the only portion of work in progress at present, except at Colbert and Little Muscle Shoals.

The present condition of the work at Muscle Shoals is as follows: At LITTLE MUSCLE SHOALS, work has been commenced looking to the improvement of this part of the obstruction, by excavating the reefs, and building spur dams at certain points, to check the velocity of the current, and give the necessary depth of water at all points. A temporary dam, 1,400 feet long, has been built across the head of the north chute, to keep the water out while the work is going on. After the excavation is completed, this dam will be removed and a permanent stone dam will be built across the south chute, to throw as much water into the new channel as may be required.

The length of time required to complete this part of the improvement will necessarily depend very much upon the stage of water during the working season; but with average good luck in this respect, it is expected that one year's work will give a good depth of channel, and that two, or at most three, years will finish all the dams and make the improvement complete and permanent.

At BIG MUSCLE SHOALS, the work consists in rebuilding and enlarging the old canal, built more than 40 years ago, by the State

of Alabama, from the proceeds of the sale of public lands donated for the purpose by the General Government. This canal was from 60 to 70 feet wide, with 17 locks, 32 feet wide and 118 feet long, with an average lift of 5 feet. The new canal will have only 10 locks. They will be 60 feet wide, and 300 feet long in the chamber. Eight of these locks are under contract. Two of them are nearly completed and a third is about half done. The contractor for the other five is just commencing work. The locks are all to be founded upon the rock, and to be made of heavy blocks of cut stone and rubble, laid in hydraulic cement. The canal trunk is to be from 70 to 100 feet wide at the water line, and 6 feet deep, excepting at extreme low water. About seven and one-half miles of the canal have been enlarged and completed, leaving seven miles yet to be done.

At ELK RIVER SHOALS no work has been done, but a recent survey, made with a view to locating the works required for this improvement, indicates that a very great saving of expense can be effected by taking the south side of the river, utilizing certain natural channels and at the same time avoiding a troublesome crossing of Elk River.

The estimate for improving Muscle Shoals, as submitted by Major Walter McFarland, in his report for 1873, was \$4,003,000; of which amount there has been appropriated at various times, \$1,035,000, but of this latter sum about \$454,000 have been expended upon Muscle Shoals, and \$260,000 at other points on the river, leaving a balance of \$321,000 to pay for work under existing contracts. The sum still to be appropriated is, therefore, \$2,968,000, of which, the River and Harbor Bill, for 1878, appropriated \$300,000.

It is estimated, that not more than two-thirds of the unappropriated balance will really be required, in consequence of reductions already made and to be made.*

As to the time yet needed to complete the improvements, Major King says: "There is every reason to believe that the work can be completed within about three years from the time adequate appropriations are available."

The territory whose natural outlet to the commerce of the

* Major King, the United States Engineer Officer at present in charge of this work, says, he is very sure a saving of at least \$1,000,000 can be realized on the older estimates, without slighting the work, though considerable of such saving would be the effect of lower prices for labor and material than when the first estimates were submitted. Major King's opinion that the gross estimate for the work at the shoals was too large is important to be observed, as he is the officer under whose charge most of the money has been expended in that locality, and he has already made large savings by modifying the old plans in some instances and abandoning them in others.

country is cut off by the obstructions at Muscle Shoals, comprises some 56,000 square miles, embracing North Alabama, part of Middle Tennessee, all of East Tennessee, and portions of Georgia, Virginia, and North Carolina. The soil, for the most part, is rich and productive, and the staple agricultural products are cotton, and the cereals.

The lands in the Tennessee Valley, particularly those in Alabama, are capable of producing in great abundance, but they are not worked to their best advantage, on account of the lack of transportation to market, which the improvement at the Muscle Shoals would supply.

The Valley is well timbered with white, red, and post, oak, ash, hickory, locust, birch, cherry, gum, black walnut, maple, red cedar, holly, beech, white and yellow poplar, yellow and long leaf pine, and several other kinds, of not much value.

In the Valley of the Tennessee river, especially in Alabama, iron, coal, and other minerals, are found in immeasurable quantity, only awaiting development by the proper improvement of the river, to add their stores to the general wealth. The coal fields of Alabama cover an area of over 5,000 square miles, and it is estimated that at least one-third of this area would find an outlet for the products of its mines by the Tennessee river, if improved. This coal is all bituminous, and of a fine quality, and with an open river the lower cities on the Mississippi would never suffer from a deficient supply, as is now often the case, for the Tennessee river never freezes up.

Marble, roofing slate, building stone, lead, copper, etc., are to be found in large quantities all along the valley of the Tennessee, as yet comparatively undeveloped, for the want of cheap transportation.

Here, too, most favorable locations are to be found for the erection of furnaces, and other manufactories. The climate of this Valley in Northern Alabama is admirably adapted to all kinds of industrial pursuits. In fact, it is said to be the most equable and pleasant in the whole South, and so genial that wheat is ripe for the harvest by the time the green blades in the North-Western States emerge from the snow. Along that portion of the Tennessee which flows through Alabama, no particle of ice is ever seen upon its bosom. Here, stock (and it is a very fine stock raising country) can graze all winter, thus saving the farmer the cost and labor of providing for it; while the rigors of a North-Western winter compel him to house and feed his stock for six months out of the twelve. Here, there is hardly a day in the year

when the farmer cannot till his ground, while the North-Western farmer has only six months in the year to work his land and provide for the six bleak and inhospitable winter months, when all out door labor is suspended. Here, too, the Malaga grape, the fig, and the pomegranate flourish in the open air—a climate without the rigorous winter of the North, or the feverish summers of the extreme South: a land with every educational and social advantage; wise and humane, but impartially enforced laws; fertile soil; pure air; and abundant water; inviting and awaiting immigration—offering happy homes to the millions who may come to seek them.

THE CHATTAHOOCHEE RIVER.*

Strictly speaking, this is a Georgia river, as, for more than one hundred miles, its western bank marks the eastern boundary of Alabama; but, being of considerable importance, commercially and otherwise, to several of the counties of the Southeastern portion of this State, it, not improperly, deserves some mention here.

The Chattahoochee has its rise in Northwestern Georgia, and flowing southwardly, along the eastern line of the Alabama counties of Chambers, Lee, Russell, Barbour, and Henry, crosses the Florida line and empties into Appalachicola river; whence its waters are conducted, through the channel of that stream, into Appalachicola Bay. It is navigable, for steamboats of moderate draught, to Girard, in Russell county, Alabama, opposite the city of Columbus, Georgia; at which latter place, its fine water power is utilized by many large cotton mills, and other manufacturing establishments. Above Girard, its ascent is obstructed by impassable rapids.

A large portion of the country along the Chattahoochee, is very fine—possessing a mild climate, and offering superior inducements to immigrants, seeking locations for agricultural and manufacturing purposes. From Bainbridge, Georgia, down, exist immense, and almost inexhaustible forests of beautiful pine, cypress, and cedar, in their virgin state, awaiting the axe and saw. Fine cotton and corn lands, also, lie along this river.

A survey of the Chattahoochee, below Columbus, Georgia, with a view to its improvement, was made, under authority of

* The word *Chattahoochee* means *Redstone*, and is derived from two Creek words, *Charta*, a stone, and *Uchee*, red. So called from the bright-colored stones, paving its bed.

Congress, in 1871,* from which, it was estimated, that the sum of \$464,000 would give unobstructed navigation throughout the river, from Columbus, to its mouth, at Appalachicola, at all stages of water, and insure the efficacy, and permanence, of the improvement. Of this amount, about \$90,000 have been appropriated and expended on the work, giving very favorable results. In addition to this sum, the River and Harbor Bill for 1878, appropriated \$10,000, for the improvement of the Chattahoochee. The obstructions consist of shoals, rapids, bars, snags, overhanging timber, sunken wrecks, etc.

THE CHOCTAWHATCHEE, ESCAMBIA, AND SIPSEY RIVERS.

The **Choctawhatchee** is a small river, emptying into Choctawatchee Bay, Florida, and navigable for steamers as high as Geneva, in Geneva county, Alabama. This river has been surveyed, under authority of Congress, and the cost of its improvement estimated at \$34,332. Of this amount, \$15,000 were appropriated and expended prior to 1878, and the River and Harbor Bill for 1878, appropriated an additional sum of \$10,000 for the improvement of the Choctawhatchee.

The **Escambia**, of which the Conecuh is the upper prolongation, rises somewhere in Bullock county, Ala., and empties into Pensacola Bay. It is not, at present, navigable, but Congress, at its last session (1877-78), directed the Secretary of War to cause to be made surveys, and estimates of the cost of its improvement—so, also, of its tributaries, the Conecuh and Patsaliga.

The **Sipsey** is a tributary of the Little Tombigbee, into which it empties at Vienna, in Pickens County, Ala. It takes its rise north of Fayette Court-house, Fayette County, Ala., at a point distant nearly two hundred miles, following the meanderings of the stream, from its mouth. This river has never been surveyed, nor have any steps been taken tending to its improvement, by the General Government, and it is not navigable, at all, for steamboats; and, for keel-boats of any kind, only a short distance. Private enterprise on the part of those living near, has accomplished something in the way of opening the river to navigation, for light draught steamers to Fayette Court-house, but much remains to be done. It is estimated that, upon being opened, 10,000 bales of cotton would annually seek a market in Mobile, over its waters.

It flows through a country well adapted to agriculture, and

* See Rep. U. S. Ch. Eng. (1872), pp. 63-64, and Appendix to same, pp. 584 and 623.

rich in stone, timber, and coal, only waiting development and a market. Barges, laden with coal, frequently come out of the Sipsey during high water, and are floated to Mobile.

PROJECTED CANALS OF ALABAMA.

GUNTERSVILLE AND GADSDEN CANAL.

The town of Guntersville is located in Marshall county, Alabama, on the left bank of the Tennessee river; while the town of Gadsden is in Etowah county, Alabama, on the right bank of the Coosa river. It is proposed to connect these two points, and the waters of their respective rivers, by a canal, to be known as the **Guntersville and Gadsden Canal**. A survey to this end was made, under authority of Congress, in 1871 *, which resulted in an estimate of \$9,518,467.00, as the cost of such an improvement. The canal, upon which these figures are based, is to be 50½ miles long, 56 feet wide at bottom, 70 feet wide at top-water, 5 feet least depth of water, 2 tow paths 8 feet wide on top, 2 feet above water surface, and locks 120 feet long between gates, and 30 feet wide. No work has ever been done on this canal, beyond the survey mentioned.

SQUAW SHOALS CANAL.

Squaw Shoals are in the Black Warrior river, about 25 miles above the city of Tuscaloosa, and it is proposed to build a canal around them, of 3½ miles in length, to reach the immense mineral deposits of the Warrior coal and iron fields. The estimated cost of such an improvement, is \$175,000. To render such a canal effective, however, it will be necessary to improve the Warrior both below and above the Shoals, and the estimate for this work, based on official surveys, is :

Cost of improving the Warrior from Tuscaloosa to Muscle Shoals.....	\$192,000
Cost of improving same from the Shoals to Mulberry Fork	64,000
Total.....	\$256,000
To which add cost of Muscle Shoals Canal.....	175,000
And we have, as a total for the entire amount,.....	\$431,000
No work has been done on this canal, beyond the survey.	

THE TENNESSEE AND TOMBIGBEE RIVERS CANAL.

Several years ago, Congress authorized a survey to ascertain the feasibility of connecting the waters of the Tennessee and Little Tombigbee rivers, by a canal, *via*. Big Bear Creek. The report was unfavorable, making the cost of such a canal \$1,705,312; and that even this amount, would give a navigable water way for not more than four or five month of the year. No work has been done on this canal, beyond the survey.†

* See Report United States Chief Engineer, (1872) p. 60, and APPENDIX thereto, p. 520.

† For an account of Muscle Shoals Canal see *ante*. pp. 105-111, TENNESSEE RIVER.

Part Eighth.

The Railroads of Alabama; and the Postal, Telegraph, and Express Facilities of the State.

THE RAILROADS OF ALABAMA.

Besides the great rivers, and other natural means of communication mentioned in PART SEVENTH, Alabama has **Twenty-four Railroads**, entering or traversing her territory, with a total length of **Completed Main Line**, of Eighteen Hundred and Nineteen miles, as follows:

<i>Name.</i>	<i>Miles Com. Main Line in Ala.</i>
Alabama Central *	81
Alabama Great Southern †	244 ‡
East Alabama and Cincinnati	22
Memphis and Charleston	156
Mississippi, Gainesville, and Tuskaloosa §	14
Mobile and Alabama Grand Trunk	59
Mobile and Girard	85
Mobile and Ohio	60
Mobile and Montgomery	180
Montgomery and Eufaula	80
Nashville, Chattanooga, and St. Louis	24
Nashville and Decatur	26
New Orleans and Mobile	41
New Orleans and Selma	21
Pensacola ||	—
Savannah and Memphis	60
Selma and Gulf	40
Selma, Marion, and Memphis	60
Selma, Rome, and Dalton	171
South and North Alabama	182
Southwestern ¶	—
Tuskegee	5
Vicksburg and Brunswick	21
Western of Alabama	187—1819 miles

Of this number, about one thousand miles have been constructed since the close of the war, in 1865.

When all the railroads, within her borders, are fully completed,

* Formerly, Selma and Meridian.

† Formerly, Alabama and Chattanooga, or, *Stanton Road*.

‡ Fractions of all the roads omitted.

§ Known as the *Gainesville Branch*, of the Mobile and Ohio.

|| This is a Florida Railroad, connecting Pensacola, Florida, with Pensacola Junction, in Alabama, on the Mobile and Montgomery Railroad. Only one-tenth of a mile of the road's length, lies in Alabama—in Escambia county.

¶ This is the Southwestern of Georgia, with its principal Terminus at Columbus, Georgia, and having, but four-fifths of a mile in Alabama—in Barbour county.

as originally projected, the State will have a total length of main line of, about, **Twenty-Eight Hundred and Fifty Miles.**

The estimated value of the railroad property in Alabama, as assessed for State taxation in 1877, was :

Main Track.....	\$ 8,952,221.47
Side Track.....	266,090.54
Rolling Stock.....	1,309,748.42
Total.....	\$10,528,060.43*

Which, at seven-tenths of one per cent., the present rate, yields an *ad valorem*, yearly, revenue to the State of \$73,696.42—or nearly one-eleventh of the amount required annually to meet the current expenditures of the State Government, and pay interest on the State debt.†

Treating of these roads, in the alphabetical order in which they have been mentioned above, the first is ;

The Alabama Central Railroad. This was, originally, the *Alabama and Mississippi*, and, afterwards, the *Selma and Meridian* Railroad. It connects Selma, Alabama, with Meridian, Mississippi—a distance of 108 miles. Its own track extends, only, from Selma to York, in Sumpter county, Alabama, where it connects with the Alabama Great Southern Railroad. Thence to Meridian, a distance of 27 miles, its trains, at present, pass over the latter line; but the Alabama Central has, now, under construction, and to be completed in October, 1878, an extension of its own from York to Lauderdale, a station on the Mobile and Ohio Railroad, in Mississippi—distant 14 miles. When completed, its trains will use the track of the Mobile and Ohio Railroad from Lauderdale to Meridian, distant 18 miles, under a contract for 25 years.

Geologically, the line of the Alabama Central, in Alabama, passes through the cretaceous formation; and the soil along it, west of Selma, and to Demopolis, consists of rich black prairie. From Demopolis to York, the soil is prairie, interspersed with sandy. Some of the finest cotton and corn producing lands, of the State, are traversed by this road; and it passes, for many miles, through the fertile Cane-brake region of Perry and Marengo counties, in Alabama. Its line is generally straight, with few grades, and light curves. Its total length lies in Alabama—Selma being the eastern, and York the western terminus. Its connections are, at *Selma*, with the Selma, Rome and Dalton, Selma and Gulf, Western of Alabama, New Orleans and Selma, and Selma,

* It is but fair to add, that these figures do not represent one-third of the actual cost of this property.

† The disbursements on these accounts, for the fiscal year ending 30th September, 1878, are estimated, by the State Auditor, at \$852,752.60. See his Report for 1877, Exhibit I.

Marion, and Memphis Railroads, and the Steamers of the Alabama river; at *Marion Junction*, with the Marion Branch Railroad, to Marion, Alabama; at *Uniontown*, with the Mobile and Alabama Grand Trunk Railroad;* at *Demopolis*, with the Steamers of the Tombigbee, Little Tombigbee, and Black Warrior rivers; at *York*, with the Alabama Great Southern Railroad.

The General Offices of the Alabama Central are located at Selma. It is in first-class running order, fully equipped, and in active operation, with through daily freight, and passenger, trains, each way. The road was completed, and in operation, from Selma to Uniontown prior to 1860; but the part between Uniontown and York was constructed during the war.†

The Alabama Great Southern Railroad. This was, originally, the *Northeast and Southwest Alabama Railroad*, out of which grew the *Alabama and Chattanooga Railroad*, by Act of the General Assembly of Alabama, approved October 6, 1866. In 1877, its bondholders, most of whom were English, were put into possession by compromise with the State, and re-organized the road, giving it the name it bears at present.

It runs, diagonally, across the State, from northeast to southwest, and connects Chattanooga, Tenn., with Meridian, Miss., a distance of 295 miles; of which, 244 lie within Alabama. From the Mississippi State line to York, and for a short distance north of Eutaw, the geological formation is the Cretaceous; thence, to Tuscaloosa, the line passes through the Post-Tertiary. A short distance above Tuscaloosa, it penetrates the great Warrior coal basin. Skirting this, it proceeds to Birmingham, where begin the rich iron deposits of the State. Thence, north, to the State line, it runs through a region abounding in coal, iron, and other valuable economic materials. From Tuscaloosa, north, the road passes almost entirely through a succession of valleys. Its maximum grade is 52 feet a mile, and its maximum curvature 3°. Some of the soils along the line of this road, notably in the Warrior bottom between the Warrior river and Tuscaloosa, and in the valleys north of Tuscaloosa, are very fertile, and produce largely of cotton, corn, wheat, and other grains. The Alabama Great Southern traverses what is known as *The Hill Country* of Alabama—probably the healthiest and best adapted to immigration and colonization in the United States; where happy homes await the millions of toiling subjects, apprenticed to the spindles of the Old and New Worlds.‡

* When completed.

† For Stations and Distances on this road, see APPENDIX.

‡ A valuable pamphlet, entitled, *The Hill Country of Alabama*, fully descriptive of the country lying along the upper portion of this road, has just been published, under the auspices of the Railroad Company. Price one shilling.

The portion of this road between Meridian and York, was completed and in operation prior to the war, and a large amount of grading done on other parts of the line; but the great body of the work has been done since 1866, and the last spike was driven May 15, 1871, at a point ten and three-quarter miles south of Tuscaloosa.

The road has, still, a large number of acres of fine agricultural and mineral lands for sale, at prices within the means of all. Its General Land Office is at Birmingham, Alabama. Its General Offices are at Chattanooga.

The road has been embarrassed very greatly since its completion, by vexatious litigation, but, happily, it has, at last, gotten out of the vortex of the courts, and is now being put in first-class order, and thoroughly equipped, when it will be one of the most useful roads in the State. It is in active operation, with daily through freight and passenger trains, each way. Its Connections are, at *Chattanooga*, with the Nashville, Chattanooga, and St. Louis, the Western and Atlantic, the East Tennessee, Virginia, and Georgia, Railroads, and the Steamers of the Tennessee river; at *Attala*, with the Gadsden Branch Railroad; at *Birmingham*, with the South and North Alabama Railroad; at *Tuscaloosa*, with the Steamers of the Black Warrior river; at *York*, with the Alabama Central Railroad; at *Meridian*, with the Mobile and Ohio, and Vicksburg and Meridian Railroads.*

The East Alabama and Cincinnati Railroad. This is one of the uncompleted railroads of the State. It is projected to connect Opelika, in Lee County, Alabama, with Guntersville, in Marshall county, Alabama, on the Tennessee river. It is completed and in active operation, with daily trains, from Opelika to Buffalo, in Chambers county, Alabama, a distance of 22 miles. All the work on this road has been done since the war. The East Alabama and Cincinnati, when fully completed, will run through the Metamorphic region of the State, until it reaches Calhoun county, where it will enter and cross, diagonally, the great Coosa coal and iron beds. Thence it will continue through rich mineral lands to Guntersville, its northern terminus. The General Offices of this road, are at Opelika, Alabama. Its Connections are, at *Opelika*, with the Western Railroad of Alabama, and its Columbus Branch, and the Savannah and Memphis Railroad. †

The Memphis and Charleston Railroad. This is a link in the extensive chain of railroads connecting Memphis, Tennes-

* For Stations and Distances on this road, see APPENDIX.

† For Stations and Distances on this road, see APPENDIX.

see, with Charleston, South Carolina. The portion of this road between Tuscumbia and Decatur, was the first constructed in Alabama—1832-33. The Memphis and Charleston Railroad spans the State from east to west, and runs through the famous, and fertile valley of the Tennessee river, in Alabama, embracing some of the finest farming, and grazing lands in the State. Geologically the line, in Alabama, passes through the mountain limestone district. Of its total length of 310* miles, 156 lie in Alabama. It has only one Alabama branch—that connecting Florence with Tuscumbia,† and known as the *Florence Branch*. Its Connections, in Alabama, are, at *Tuscumbia*, with the Florence Branch; at *Decatur*, with the Louisville and Great Southern Railroad,‡ and Steamers of the Tennessee river; at *Stevenson*, with the Nashville, Chattanooga, and St. Louis Railroad. The Memphis and Chattanooga Railroad is fully equipped and in active operation, with daily through freight and passenger trains each way. General Offices, Memphis, Tennessee. §

The Mississippi, Gainesville, and Tuscaloosa Railroad. This is what is known as the *Gainesville Branch* of the Mobile and Ohio Railroad. It was projected to connect Narkeeta, a station on the latter road, in Mississippi, with Tuscaloosa, in Alabama; but is completed and in active operation, with daily trains, from Narkeeta to Gainesville, in Sumter county, Alabama, only, a distance of 21 miles. Its entire length, in Alabama, is in Sumter county, through which, it runs in a diagonal direction, from West to East; affording the people of that section, short, but reliable, means of communication with the rest of the country. ||

The Mobile and Alabama Grand Trunk Railroad. This is another of the uncompleted roads of the State; but destined, when fully completed, to be one of the most important and valuable in Alabama. It was projected to extend from Mobile to Birmingham, Ala., and so connect the Gulf of Mexico with the mineral regions of this State, by the shortest line and lowest grades, thus making Mobile the great coaling station for the steam marine of the Gulf. Another object of its projectors, was to form a link of the shortest possible railway line between New York and New Orleans, and, in addition, open up a fertile section of Alabama to

* This is the distance between Memphis and Chattanooga.

† The distance between these two points is 5 miles.

‡ This line extends from Montgomery, Alabama, to Louisville, Kentucky, and is made up of the Louisville and Nashville, Nashville and Decatur, and South and North Alabama Railroads—all consolidated under one management, and operated under the name of the Louisville and Great Southern Railroad.

§ For Stations and Distances on this road, see APPENDIX.

|| For Stations and Distances on this road, see APPENDIX.

the commerce of Mobile. The Mobile and Alabama Grand Trunk Railroad was incorporated by an act of the General Assembly of Alabama, approved February 23, 1866; and the first ground was broken north of Three-mile Creek, in Mobile county, in September, 1870. It is completed from Mobile to the Tombigbee river, a distance of 59 miles. Its total length, when completed to Birmingham, will be 232 miles; and estimated total cost, \$5,000,000. West of the Tombigbee, the line runs on an elevated plateau, and, opposite Jackson, in Clarke county, curves eastwardly, and crosses the Tombigbee. Then it will continue in a northeasterly course up the valley of Bassett's Creek for 35 miles, along an inclined plane of easy grades, to the dividing ridge between the Tombigbee and Alabama rivers. Cutting through this ridge, it will traverse the fertile post-oak and cane-brake regions of Marengo and Perry counties, in Alabama, and thence run over a rugged and broken country for a few miles to the valley of the Cahaba river, and, strike the mineral bed, about, 180 miles from Mobile. For the next 50 miles, to Birmingham, the road will traverse the richest mineral region in North America, abounding in coal, iron, marble, etc.—inexhaustible in quantities and easily accessible.

Great interest is manifested in the early completion of this road, and steps are now being taken which, it is confidently believed, will result in its immediate construction. Its General Offices are at Mobile; and its only Connections are at that point, with the Mobile and Ohio, Mobile and Montgomery, and New Orleans and Mobile Railroads, and the Steamers of the river. †

The Mobile and Girard Railroad.—This, in alphabetical order, is the fourth of the uncompleted railroads of the State. It is intended to connect Girard, in Russell county, Alabama, with Mobile; and is completed from Girard to Troy, in Pike county—a distance of 85 miles. Its General Offices are at Columbus, Ga.; and its Connections are, at *Columbus*, with the North and South Georgia, the Southwestern of Georgia, and the Western of Alabama, Railroads, and the Steamers of the Chattahoochee river; at *Union Springs*, with the Montgomery and Eufaula railroad. It is in active operation to Troy, with daily trains.*

The Mobile and Ohio Railroad.—This is one of the great completed lines of the State, and connects Mobile, Alabama, with Columbus, Kentucky, a point on the Mississippi river, distant from Mobile 472 miles.

* For Stations and Distances on this road, see APPENDIX.

† For Stations and Distances on this road, see APPENDIX.

The Mobile and Ohio Railroad was incorporated in the year 1848: the several States through which the projected road was to pass granting charters respectively—Alabama, February 3d; Mississippi, February 17th; Tennessee, February 28th; and Kentucky, February 26th, of same year. The first steps to consider the feasibility of building the Mobile and Ohio railroad, were taken at a public meeting held in the city of Mobile, January 11th, 1847; the object being, as then set forth, to develop a fine timber and agricultural region, and to connect the Ohio and upper Mississippi Valley with the Gulf of Mexico—opening up a trade through Mobile with the West India and South American ports, and with the commerce of the Pacific by railway across the Isthmus of Tehuantepec.

The first ground was broken at a point about twenty-five miles from Mobile, in the month of October, 1849, and from that time the work was pushed as rapidly as practicable; but owing to unavoidable delays in procuring funds, the road was not completed until the 22d day of April, 1861, when, with appropriate ceremonies, the last bar of iron was laid, at a point about three miles north of Corinth, Mississippi, thus completing the entire line between Columbus, Kentucky, and Mobile, Alabama—W. J. D. Baldwyn, Esq., the projector of the road, driving the last spike.

The cost of the 486 miles of road (472 main line and 14 Columbus branch), exclusive of interest, was \$11,965,097.89, or \$24,619.50 per mile—including machinery, rolling stock, and general and incidental expenses. The length of the road, exclusive of side track, is:

Main Line—Mobile to Columbus, Ky.....	472 miles.
Gainesville Branch—Narkeeta to Gainesville.....	21 “
Columbus Branch—Artesia to Columbus, Miss.....	14 “
Starksville Branch—Artesia to Starksville.....	11 “
Aberdeen Branch—Muldon to Aberdeen.....	9 “

Total length of road.....527 miles.

Of the foregoing, the length of main stem in Alabama is sixty and sixty-six one hundredths of a mile.

The country through which the road passes, for almost the entire distance, is of the secondary alluvial formation, with but very little rock, and that of the softest kind of limestone and sandstone. Its surface is moderately undulating; the highest point being about 500 feet above tide water at Mobile. The maximum gradient, going south, does not exceed 30 feet to the mile; or north, 40 feet. The maximum curvature (with one or two exceptions of one additional degree) is three degrees.

The soil for nearly three-fourths of the entire line is excellently adapted to agriculture, being fertile to an exceptional degree, and capable of very varied products.

The greater part of the lands owned by the Mobile and Ohio Railroad, which are for sale, lie in the States of Alabama and Mississippi, and are well watered and wooded, being mostly covered by forests of the long leaf yellow pine, which, besides furnishing timber of especial value, produces naval stores in abundance.

The climate is healthful and pleasant, and the soil is excellently adapted to the cultivation of fruits and vegetables; and, with care, other crops peculiar to this latitude can also be successfully cultivated.

These lands will be sold in lots of forty acres and upwards, and to actual settlers concessions will be made. For any further particulars in regard to them, application may be made to Capt. A. S. Gaines, Land Commissioner, Mobile, Ala.

The Mobile and Ohio is in active operation, and one of the smoothest, and best equipped railroads in the United States; with daily through freight and passenger trains, each way. Its General Offices are at Mobile, Ala. Its Connections in Alabama, are, at *Mobile*, with the Railroads centering there, and the Steamers of the Mobile river.*

The Mobile and Montgomery Railroad. This road is completed, and connects Mobile, with Montgomery—the capital of Alabama. Its total length is 180 miles, all in Alabama. It was made up by a consolidation of the *Alabama and Florida* Railroad, extending from Montgomery to Pollard, with the *Mobile and Great Northern* Railroad, extending from Pollard to the Tensas river. The act of the General Assembly of Alabama, authorizing the consolidation, was approved August 8, 1868. By an act of the General Assembly, approved February 25, 1870, an extension of the Mobile and Montgomery Railroad from Tensas to Mobile, was authorized. At that time, steamers connected its Tensas terminus with the city of Mobile. This extension was soon under contract, and the work executed with but little delay.

Geologically, the line runs through the Tertiary formation, until it arrives just above Greenville, in Butler county; thence to Montgomery, it passes through the Cretaceous.

For the first 20 miles out of Mobile, to Tensas and immediately above, the line passes through a continuous swamp, and over several large rivers, spanned by an extensive, and durable,

* For Stations and Distances on this road, see APPENDIX.

system of bridges and trestling; built since 1870, at a cost of more than \$1,000,000, and a masterpiece of railroad engineering. For the next 130 miles, it runs through light sandy pine woods, in which are large areas of yellow pine timber, and many productive turpentine orchards. Thence, to Montgomery, 30 miles, the line traverses rich, black, prairie lands—very fertile, and well adapted to corn and cotton.

The Mobile and Montgomery is a link in a grand chain of railroads, connecting New Orleans with New York. It is thoroughly equipped and in active operation, with daily through freight and passenger trains, each way. Its General Offices are at Montgomery, Alabama; and its Connections are, at *Mobile*, with the other Railroads entering that city, and the Steamers of the Mobile river; at *Pensacola Junction*, with the Pensacola Railroad; at *Montgomery*, with the several Railroads radiating from that centre, and the Steamers of the Alabama river.*

The Montgomery and Eufaula Railroad. This line connects Montgomery with Eufaula, Alabama, a distance of 80 miles. Geologically, its entire length is in the cretaceous formation of the State, and for 40 miles, next east of Montgomery, it passes through rich black prairie and cane-brake lands, well adapted to the production of cotton, corn, sugar cane, etc. Throughout the rest of the distance to Eufaula, the soil is sandy. It connects at *Union Springs*, with the Mobile and Girard Railroad; and at *Eufaula*, with the Central Railroad, of Georgia, the Vicksburg and Brunswick Railroad, and the Steamers of the Chattahoochee river. The Montgomery and Eufaula Railroad is extensively used by winter visitors to Florida, from the Northwestern States; and is the shortest line from Louisville, Cincinnati, St. Louis, Chicago, and other points in the West, to the land of Flowers. The road is well equipped and in active operation; with daily through freight and passenger trains, each way. Its General Offices are at Montgomery, Alabama. The Montgomery and Eufaula Railroad was incorporated by an act of the General Assembly of Alabama, approved January 13, 1860. Work on it was begun at Montgomery, in 1860; but the war put a stop to its further construction. Work was resumed after the war, and the road was completed in 1872—the last spike being driven in that year, at Eufaula.†

The Nashville, Chattanooga, and St. Louis Railroad. This road is completed, well equipped, in active operation, and

* For Stations and Distances on this road, see APPENDIX.

† For Stations and Distances on this road, see APPENDIX.

is a link in a chain of roads connecting the points named. Only 24 miles of its length lie within Alabama—in Jackson county. Its Connection, in Alabama, are, at *Stevenson*, with the Memphis and Charleston; and at *Bridgeport*, with the Jasper Branch Railroad.*

The Nashville and Decatur Railroad. This is another completed railroad, and connects Nashville, Tennessee, with Decatur, Alabama, a distance of 123 miles; of which, only 26 miles are within Alabama. The Nashville and Decatur is one of the three roads forming the consolidated Louisville and Great Southern Railroad, connecting Montgomery, Alabama, with Louisville, Kentucky, a distance of 490 miles; the other railroads going to make up this consolidated line, are, the Louisville and Nashville, and the South and North Alabama.

The Alabama Connections of the Nashville and Decatur Railroad, are, at *Decatur*, with the Memphis and Charleston, and South Alabama Railroads, and the Steamers of the Tennessee river.†

The New Orleans and Mobile Railroad. This road connects the two points named, and is fully completed and equipped, and in active operation, with daily through freight and passenger trains; each way. It is 141 miles in length; of which, 41 miles lie within Alabama. It was incorporated by an act of the General Assembly of Alabama, approved November 24, 1866; and the first ground was broken, at Mobile, May 19, 1868. The appointments of this railroad are first-class in every respect, and with its smooth road bed and track, it is probably one of the finest roads in the United States.

In Alabama, it passes through the drift formation; and the lands lying along its line, are light, sandy, and well timbered with valuable pine.

Its General Offices are at New Orleans. Its Connections in Alabama, are all at *Mobile*, with the Railroads of that city, and the Steamers of the river.‡

The New Orleans and Selma Railroad. This is an uncompleted railroad, and was projected to connect Selma, Alabama, with New Orleans, Louisiana. Its proposed line runs through the Alabama counties of Dallas, Wilcox, Marengo, Clarke, Choctaw, and Washington, crossing the projected Mobile and Alabama Grand Trunk Railroad, in Marengo county, and intersecting the Mobile and Ohio Railroad at the Mississippi

* For Alabama Stations on this road, see APPENDIX.

† For Stations and Distances on this road, see APPENDIX.

‡ For Stations and Distances on this road, see APPENDIX.

State Line; thence it passes in a direct southwesterly course through the States of Mississippi, and Louisiana, to New Orleans. It is completed, and in active operation to Martin, in Dallas county, Alabama, 21 miles out of Selma. Its General Offices are at Selma, Alabama; and its only Connections are with the Railroads entering that city, and the Steamers of the Alabama river. This road had its inception after the war.*

The Pensacola Railroad. This is a Florida railroad, connecting Pensacola, Florida, with the Mobile and Montgomery Railroad, at *Pensacola Junction*—distant 44 miles from Pensacola. Only one-tenth of a mile of its length is within Alabama—in Escambia county. Its General Offices are at Pensacola.

The Savannah and Memphis Railroad. This road is, also, uncompleted. It was projected to connect Opelika, in Lee county, Alabama, with a point on the Memphis and Charleston Railroad, in Colbert county, Alabama; and so form a link in a chain of roads, to extend from Savannah, Georgia, to Memphis, Tennessee. The proposed line of the Savannah and Memphis passes in a Northwesterly direction from Opelika, through the Alabama counties of Lee, Chambers, Tallapoosa, Coosa, Talladega, Shelby, Jefferson, Walker, Winston, Franklin, and Colbert, crossing, successively, the Selma, Rome, and Dalton Railroad, in Talladega county, and the South and North, and Alabama Great Southern Railroads, in Jefferson county.

It is completed and in operation, to Goodwater, in the northeastern edge of Coosa county, 60 miles out of Opelika. Its General Offices are at Opelika, where are its only Connections, viz: With the Western of Alabama, and East Alabama and Cincinnati Railroads, and the Columbus, Georgia, Branch of the Western.†

The Selma and Gulf Railroad. This is another uncompleted railroad of Alabama; and has, also, had its inception since the war. It was projected to connect Selma, Alabama, with the Gulf of Mexico, at Pensacola, Florida. When completed, it will intersect the Mobile and Montgomery Railroad, at Pollard, in Escambia county, Alabama, and thence, run down that line, 6 miles, to Pensacola Junction, where it will connect with the Pensacola Railroad, leading to Pensacola. This road is completed and in active operation to Pineapple, in Wilcox county, Alabama, 40 miles south of Selma. Its General Offices are at Selma; where it connects with the Railroads diverging from that city, and the Steamers of the Alabama river.‡

* For Stations and Distances on this road, see APPENDIX.

† For Stations and Distances on this road, see APPENDIX.

‡ For Stations and Distances on this road, see APPENDIX.

The Selma, Marion, and Memphis Railroad. This road was originally projected to extend from Selma, Alabama, *via*. Marion, Alabama, to Memphis, Tennessee; but it is completed and in operation to Sawyers, in Hale county, Alabama, only a distance of 60 miles from Selma. It has had its origin since the war, and is well known as the *Forrest Road*, from the fact that General Forrest, the famous Confederate cavalry leader, was its first, and very active, President.

The General Offices are at Selma, Alabama, where it connects with the other Railroads, and the Steamers, of that city. *

The Selma, Rome, and Dalton Railroad. Called, also, the *Blue Mountain* line, from its skirting the base of Blue Mountain, in Calhoun county, Alabama. It was originally known as the *Alabama and Tennessee Rivers* Railroad; and was designed to form one of a chain of railroads connecting the Alabama river at Selma, with the Tennessee river at Chattanooga. It was projected and partly constructed (the portion in Alabama, out from Selma), before the war; but has been completed since, when it was given the name it bears at present. This line extends in a northeasterly and southwesterly direction from Selma, Alabama, to Dalton, Georgia, *via*. Rome, Georgia, and is 236 miles in length, of which 171 miles lie within Alabama. Geologically, its line runs through the Cretaceous, and Post Tertiary formations in Alabama, until it reaches Shelby county, where it enters the Silurian and Devonian; thence, it continues through the last formation until it leaves the State—passing from Shelby county northward, through a section of Alabama abounding in mineral wealth. Along the Selma, Rome, and Dalton Railroad, are a number of extensive iron furnaces, and locations where coal is largely mined. So, also, are to be found along this road extensive lime kilns, which supply the State with a very superior quality of lime, manufactured from the lime rock to be found in that section in great abundance. The Selma, Rome, and Dalton Railroad is in good order, with a good, hard, smooth bed, and is well equipped. It is in active operation, with daily through freight and passenger trains, each way. Its Alabama connections are, at *Selma*, with the Railroads, and Steamers, of that city; at *Calera*, with the South and North Alabama Railroad. Its General Offices are at Selma, Alabama. †

The South and North Alabama Railroad. This railroad extends longitudinally through the State, and connects Mont-

* For Stations and Distances on this road, see APPENDIX.

† For Stations and Distances on this road, see APPENDIX.

gomery, Alabama, with Decatur, Alabama. It is a link in a great chain of railroad running from Montgomery, to Louisville Kentucky—known as the Louisville and Great Southern Railway. The length of the South and North Alabama Railroad, omitting fractions, is 182 miles—all lying within Alabama. Geologically, the line passes through the Cretaceous and Post Tertiary formations in Alabama, until it reaches Shelby county, where it enters the Silurian and Devonian; thence, it passes through the Carboniferous, to Decatur. This Railroad, like the Alabama Great Southern, and Selma, Rome, and Dalton Railroads, also, traverses the rich mineral regions of the State, and along its line, are several large furnaces, and many extensive coal and iron mines. The South and North Alabama Railroad was projected before, but has been built since the war. It is one of the smoothest and best equipped railroads in the South, with an excellent and durable bed, and is in active operation, with daily through freight and passenger trains, each way. It has one Branch Road—the *Elmore Branch*, from Elmore Station to Wetumpka, Alabama, a distance of 6 miles, just completed, and over which trains pass daily. This branch was built by convict labor, from the Alabama Penitentiary, and at the expense of the State, to afford greater facilities to that institution. The General Offices of the South and North Alabama Railroad are at Birmingham, Alabama; and its Connections are, at *Montgomery*, with the Railroads and Steamers of that city; at *Elmore Station*, with the Elmore Branch Railroad to Wetumpka; at *Calera*, with the Selma, Rome, and Dalton Railroad; at *Birmingham*, with the Alabama Great Southern Railroad; at *Decatur*, with the Nashville and Decatur, and Memphis and Charleston Railroads, and the Steamers of the Tennessee river.†

The Southwestern Railroad (of Georgia.) This is a Georgia railroad, extending from Columbus to Cuthbert, Georgia, and having only four-fifths of a mile of its length within Alabama, in Barbour county.

The Tuskegee Railroad. This is a short railroad, connecting Chehaw Station, on the Western Railroad, with Tuskegee, in Macon county, a distance of 5 miles—projected and built since the war.

The Vicksburg and Brunswick Railroad. This is an uncompleted railroad. It was incorporated January 23, 1867, and projected to connect Eufaula, Alabama, with Meridian, Mississippi, *via* Troy, Greenville, and Camden, Alabama. At Meridian

† For Stations and Distances on this road, see APPENDIX.

it was designed to connect with the Vicksburg and Meridian, and at Eufaula with a road to Brunswick, Georgia, on the Atlantic coast. This road is built and equipped and in active operation, with daily trains to Clayton, the county site of Barbour county, 21 miles from Eufaula. Its General Offices are at Eufaula, and its only Connections are at that point, with the Montgomery and Eufaula, and Southwestern (of Georgia) Railroads, and the Steamers of the Chattahoochee river.*

The Western Railroad (of Alabama.) This railroad extends from Montgomery, Ala., to West Point, Ga.; with a branch from Montgomery to Selma, 50 miles,* and one from Opelika, to Columbus, Ga., 29 miles. The part, between Montgomery and West Point, was formerly known as the *Montgomery and West Point Railroad*. The Connections of the Western Railroad are, at *Selma*, with the Railroads and Steamers of that city; at *Montgomery*, with the Railroads and Steamers of that city; at *Chehaw*, with the Tuskegee Railroad; at *Opelika*, with the Savannah and Memphis, East Alabama and Cincinnati, and the Columbus Branch Railroads; at *West Point, Ga.*, with the Atlanta and West Point Railroad; at *Yongsboro*, with the Chewacla Railroad, at *Columbus, Ga.*, with the Southwestern Railroad, and the Steamers of the Chattahoochee river. Geologically, the line of this road, in Alabama, passes through the Cretaceous formation to near Chehaw; thence to Notasulga, the formation is of the Post-Tertiary; and thence to West Point, of the Metamorphic. The maximum grade of the Western Railroad is 56 feet to the mile, and the maximum curve 5°. Various black prairie, light-loamy, and rolling red soils occur along its main stem and branches, well adapted for agricultural purposes. The Western Railroad is, also, well equipped and in active operation, with daily through freight and passenger trains, each way. General Offices, Montgomery, Ala.†

THE POSTAL FACILITIES OF ALABAMA.‡

Up to June 1, 1878, there had been established in Alabama, 970 Postoffices,|| and to this list new ones are constantly being added. At that date, of the other Southern States Arkansas had 731, Florida 271, Georgia 890, Louisiana 388, Mississippi 618, North Carolina 1,298, South Carolina 543, Tennessee 1,232, Texas 1,116, Virginia, 1,590, West Virginia 829.

* For Stations and Distances on this road, see APPENDIX.

† Built since the war.

‡ For Stations and Distances on this road, see APPENDIX.

§ Carefully compiled from the United States Official Postal Guide for July, 1878.

|| For Alphabetical List of these Postoffices, see APPENDIX.

Of the 970 offices in Alabama, 57 are Money-Order offices.* Cullman and Eufaula are, also, German International Money-Order offices; Huntsville British and Swiss; and Mobile and Montgomery British, Canadian, German, Swiss, and Italian. Mobile has Free Delivery, with six Letter-Carriers.

Landings on the eastern shore of the Bay of Mobile have daily mail service by steamer, from Mobile City. Landings on the Mobile, Alabama, Tombigbee, Little Tombigbee, and Black Warrior Rivers have semi-weekly service, by steamers from Mobile City—Tuesdays and Saturdays. Landings on the Coosa river are served from Rome, Georgia, by steamers—semi-weekly.

There is no lack of mail facilities throughout the State, and every section is regularly and satisfactorily served. Tampering with the mails is rarely heard of in Alabama, and losses seldom occur.

THE TELEGRAPH AND EXPRESS FACILITIES OF ALABAMA.

The lines of the Western Union Telegraph Company ramify throughout every section of the State, while the Southern Express Company has routes over all the railways in the State—thus affording the people of Alabama ample and in every way reliable Telegraph and Express facilities. The employes of the telegraph company are skillful and attentive; while those of the express company are honest and competent. Express robberies or peculations by express officials never happen in Alabama.

* For Alphabetical List of Money-Order offices in Alabama, see APPENDIX.

Part Ninth.

*Outline of the Geology of Alabama.**

BY

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I. GEOLOGICAL SURVEY.

HISTORICAL SKETCH.

From the Report of Progress of the Geological Survey, for the year 1874, we make the following extracts:

The first systematic examination into the geological structure of the State of Alabama, was begun in 1847 by Michael Tuomey, then Professor of Mineralogy, Geology, and Agricultural Chemistry, in the University of Alabama.

It was made the duty of that officer, at his appointment, "to spend such portions of his time, not exceeding *four months* in each year, in exploring the State in connection with his proper department, as the Trustees may consider for the advantage of the State."

Reports of this survey were made to the Board of Trustees, and extracts from the same, which were thought to be of general interest, were published in the Tuscaloosa newspapers.

The interest excited by these published extracts, led to the passage by the General Assembly of the State, in January, 1848, of resolutions appointing Professor Tuomey Geologist to the State, and requiring him to lay before the General Assembly the full reports of his geological surveys and explorations.

The expenses of these explorations were borne by the University, and the report upon them was submitted to Governor Collier, in December, 1849, which report was published at the cost of the State in 1850.

Professor Toumey continued his explorations, the University of Alabama still bearing the expenses of the survey, until the passage by the General Assembly, in 1854, of "An act to provide for a geological and agricultural survey of the State," by which the Governor was authorized to appoint a State Geologist, and the sum of ten thousand dollars, exclusive of the salary of the State Geologist, was appropriated for the purpose of employing assistants and defraying the incidental expenses of the survey.

* Written expressly for this HAND-BOOK.

Professor Tuomey received the appointment of State Geologist, and early in 1854 took the field, in company with E. Q. Thornton, Esq., his assistant. Other assistants in field work, were Oscar M. Lieber, Esq., and W. Echols Hollowell, Esq., and in January, 1855, Dr. John W. Mallet was appointed Chemist to the survey.

In the autumn of 1855, the second biennial report was submitted to the Legislature, and ordered to be printed. The printing of the report was delayed from various causes: Professor Tuomey's death occurred in March, 1857, and upon Prof. Mallet devolved the duty of superintending the publication of the report, which appeared in 1858.

Since the termination of the war, the attention both of Alabamians, and of citizens of other States, has been directed to the vast wealth of our natural resources. The development of this hidden wealth was naturally looked to as one of the most important factors in the problem of the restoration of the prosperity of the State. The changes in the system of labor, and in the relations of the laborer to the landowner, consequent upon the decisions of the war, lessened very materially the profits of agriculture, which, until 1865, and even a few years later, was almost the only great industry within the limits of the State.

Before our citizens had learned to adapt themselves to the new order of things, many a disastrous failure had fallen upon them. Discouraged by these repeated failures, many have looked for other fields in which to invest more profitably their labor and capital. The immense coal and iron deposits of Alabama could not long escape notice, and demands for the two Geological Reports of Prof. Tuomey were continually made by men desirous of investing in the iron and coal lands. These reports have for some years been very scarce, and I believe are not now to be had. Attempts have been made to induce the General Assembly to republish them; but without success. Many private surveys have been made by companies; but the reports of such explorations have not been always at the service of the people.

Under these circumstances, it will not excite surprise that the Board of Regents of the University, at their meeting in June, 1871, passed an ordinance requiring the Professor of Mineralogy and Geology in the University to devote as much time in travelling through the State in making collections and examinations in Geology, as was consistent with his duties at the University.

Under this ordinance some field work was done, and at the meeting of the General Assembly, in 1872-73, a bill was passed and approved by the Governor, April 18, 1873, appointing Dr. Eugene A. Smith, Professor of Mineralogy and Geology in the University of Alabama, State Geologist; requiring him to make annual reports of the results of the survey; and to make collections of specimens illustrative of the Geological, Mineralogical, and Agricultural features of the State, one suite of which was to be deposited in the Cabinet of the University of Alabama, at Tuscaloosa, a second suite in the Cabinet of the Agricultural and Mechanical College, at Auburn, and a third suite in the office of the

Commissioner of Industrial Resources, at the Capitol. To carry out the work of the survey, an appropriation was made, of \$3,000, to purchase chemical apparatus, wagon and team, camp equipments, etc., and an annual sum of \$500, was voted to pay the travelling and incidental expenses of the Geologist during such time as he might be engaged in the field work of the survey.

Since the passage of this act, the three months of the summer vacation of each year, have been devoted to the field work, three reports of Progress have been published, suites of specimens have been collected and deposited at the University and at the Agricultural College.

The office of Commissioner of Industrial Resources having been abolished, no specimens have been deposited at the Capitol, in Montgomery.

It will be seen that the total expense to the State of this survey, with the exception of that for equipments, and for the printing of the annual reports, is the sum of \$500, annually.

In a State which depends, or which will in the future depend, so greatly upon its mineral wealth for its prosperity, this sum is a mere pittance. The financial embarrassment of the State at the time of the institution of the survey, due to years of misrule, prevented a larger appropriation. Now, however, with the return of prosperity, there is no reason why a sum of money should not be expended on the survey, in some way commensurate with the importance of the interests to be furthered by it.

II. GENERAL GEOLOGICAL FEATURES AND SUB-DIVISIONS.

Geographically we may divide the State into two sections, differing very greatly from each other in area.

The first, or Northern section, belongs to the great Mississippi Valley, its drainage being by the Tennessee and its tributaries into that river. It includes the valley of the Tennessee in North Alabama. The second or Southern section includes the rest of the State, the drainage of which is into the Gulf through the waters of the Chattahoochee, Choctawhatchee, and Alabama rivers and their tributaries.

Geologically, there are three tolerably well defined divisions, viz: The Northern, the Middle, and the Southern.

The first of these includes the first geographical division given above, together with the greater part of the Warrior coal fields, and it belongs to that great table land lying to the north and

northwest of the area of uplifted strata which make up the second or middle division.

This middle division is merely the continuation and southwestern termination of a series of uplifted and fractured folds which, under the name of the Appalachian Chain, extends from the Eastern States through Pennsylvania, etc., into Alabama.

Throughout this part of the State, the strata are seldom horizontal, but generally dip at considerable angles, usually either southeast or northwest.

The southern and southwestern boundary of this region is approximately a line passing through or near the towns of Fayetteville, Tuscaloosa, Centerville, Wetumpka, Tallassee, and eastward to Columbus, Georgia.

South and southwest of this line, lies the third or southern division.

The rocks underlying this part of the State have not been pressed into folds like the strata of the adjoining region, but lie nearly horizontal—with, however, a gentle slope south and west towards the gulf.

Before going into any details concerning the geology of the State, it will be necessary to explain certain geological terms, and to give a table of the geological formations of North America, noting those which are represented in Alabama.

By far the greater part of the rocks of this country show evidences of having been deposited in beds or layers, and are called from that circumstance, *stratified* rocks (from *stratus*, spread out.) In some localities, filling fissures and cavities in the bedded rocks, are others which are *massive*, *i. e.*, without planes of stratification. Besides this absence of all evidence of bedding, these rocks show quite plainly that they have been erupted in a fused or semi-fused condition, and the name, *igneous rocks*, has reference to this character.

In structure also, these two classes of rocks show striking differences; the stratified are plainly beds of materials derived from the disintegration of some pre-existing rocks. They are, in other words, "more or less consolidated sediments." They have been deposited gradually and slowly in nearly horizontal beds from suspension in water, just as mud, sand, and gravel are now seen deposited in beds at the bottoms of ponds, lakes, and running streams. From the size of the material some estimate can be formed of the circumstances attending the deposition; thus in swiftly running water, only pebbles and larger fragments will be deposited; sand and the finer particles constituting mud, will

be washed further to be deposited finally where the current is slower. In still water is found only the finest sediment. This sorting of the materials, by the action of water, into finer and coarser sediments, gives rise to the beds, or layers, or *strata*, which are the marked characteristics of the stratified rocks.

We notice at the present time, that in mud beds and other sediments, leaves, sticks, and animal remains, such as bones, shells, &c., are frequently buried and thus preserved: so it has probably always been since the introduction of life upon the earth.

Organic remains of this kind are constantly met with when beds of stratified rocks are examined; they are usually called *fossils* from *fossilis*, *dug up*.

They show very striking differences when compared with each other, some very closely resembling the remains of animals and plants of the present day; whilst others differ widely from anything now living, and if we could examine a series of beds in regular superposition upon each other, we should find that the fossils diverged more widely in appearance from the forms of the present day, the lower, (and consequently the older) the bed from which they were obtained.

Each sedimentary bed includes the remains of those organic beings only, which lived during the period of its deposition. In this way the fossils become in some measure indicative of the age of the stratum in which they occur, for it has been found possible to divide the whole series of stratified rocks into *groups or formations* "each of which is characterized by possessing an assemblage of organic remains, which do not occur in association in any other formation." From a collection of the fossils therefore, of any particular bed, may be determined with very little difficulty the geological horizon of the bed.

The first and most obvious test of the relative age of any bed or group of beds is that of superposition. If we had an unbroken and undisturbed series of deposits from the first formed to those of the present day, the question of relative age, would of course be merely a question of superposition: but such a series is nowhere to be found. In some of the cañons of the West, are exposed clear sections through one or two geological formations, but even these are exceptional.

In general we find the rocks no longer in their original horizontal positions, but inclined or tilted at greater or less angles.

Where the strata are in their original positions, their relations to each other can be seen only where they have been cut through,

as for instance, by the denuding action of waters, and in the deepest cañons, these sections are at most only a few thousand feet in thickness.

Where the rocks have been tilted up, and thrown into folds, and the crest of the folds swept away by denudation, by crossing the upturned edges or *outcrops* of the different beds, we may determine the order of superposition through still greater thicknesses, sometimes amounting to several miles.

In this way, by examining the superposition of the beds upon each other, their relative ages may be determined, but when we consider that the aggregate thickness of the stratified rocks so far as examined by geologists, is about 15 to 18 miles, and that in any one locality only a part of these beds may be seen together, and when we remember that whilst in one part of the world deposits were forming, in another part, the land would be above the water, and thus receive no deposits, and that an *unbroken* series of sediments nowhere exists, the difficulty of determining by superposition alone, anything more than the relative age of a few adjacent beds will be seen, and the great value of fossils in deciding the question of age where other tests are insufficient, becomes apparent.

The *massive* or *igneous rocks*, on the other hand, are not made up of layers of material of different kinds. They are not made up of fragments, (coarse or fine) of other rocks, but are generally more or less crystalline. They are found filling the fissures in other rocks, wedged in between the beds of the stratified rocks, or covering unconformably these beds, as if they had been poured out in a melted condition. They show no traces of organic remains or fossils.

For our purposes we may dismiss this class of igneous rocks with the remark that in Alabama their distribution is confined to the region of metamorphic rocks to be explained below, where they are seen filling the fissures in these, sometimes crossing the bedding planes, sometimes intruded between the beds. These masses of igneous rocks are commonly called *dikes* or *trap dikes*.

There is another class of rocks somewhat intermediate between the two described. They are distinctly bedded on the one hand, and are crystalline and usually devoid of fossils on the other. These are the *crystalline schists*, or *metamorphic rocks*.

When a mass of ordinary soil or clay is exposed to the action of heat it is very sensibly changed. We see on a small scale something of the nature of this change, in the transformation by heat of clay into bricks. On a larger scale, instances of similar

kind are noticed where in mines, the coal beds have caught on fire and burned for a long time. The rocks adjacent to these burning beds, are baked into hard masses as unlike the original rocks, as the bricks are unlike the unbaked loam. So on a still larger scale, whole series of strata, over considerable superficial areas, under the influences of long continued heat or pressure or both combined, have been changed or *metamorphosed*. Beds of mud or clay have been by these influences altered into hard clay slates, or mica slates, sandstones into crystalline mica slates, gneiss, &c. In most cases, by this metamorphic action the traces of the original bedding are not entirely lost, but fossil remains are almost universally obliterated, though exceptions to this are well known.

What is the source of the heat and pressure which cause this change in sedimentary rocks?

In a district where metamorphic rocks occur, one can not fail to notice that they are rarely horizontal, but dip at various angles to the horizon. Great folds and cracks in the strata may also be observed, and moreover, such rocks are found in mountainous regions. Folds, fractures or dislocations of the strata (technically called *faults*), metamorphism or crystallization of the sedimentary rocks, and the formation of mountain chains,—these are all concomitants of, or caused by the oscillations of the crust of the earth.

Not to go too much into theoretical discussions, it is now a generally received hypothesis amongst geologists, that the earth is a cooling globe; that it was once in a melted condition, and as the cooling progressed, by radiation into space, a solid crust was formed; that in cooling the earth contracts; that the contraction is not equal in all parts of the earth, some parts cooling and contracting more rapidly than others; that this inequality in the contraction causes some parts to sink below the general level,—these lower basins being now occupied by the waters of the ocean; that the sinking of the oceanic depressions causes a pressure against the higher land at the shore; by which this higher land is pressed into wrinkles. A familiar and homely illustration is often given in the drying of an apple, where the skin is thrown into wrinkles. The pressure caused by the contraction of the areas occupied by the sea would be exerted against the more stable land of the shore, in such a way as to cause a fold or a series of folds approximately parallel to the sea shore. That in soft and yielding material these folds would be easily produced, and of not very great height; that as the earth's crust became

more stiff and unyielding it resisted the tendency to be thrown into folds for a time, but when the pressure became too great, folds were nevertheless produced, but of much greater size, and the bent and folded crust would often be unable to bear the strain and would be broken (as a piece of stiff pasteboard is broken by being sharply folded), causing *faults*; that in proportion as the earth's crust became more rigid, the resistance to the folding would be greater, and the catastrophe, when eventually the pressure would overcome the rigidity of the crust, would be correspondingly more profound; that finally, this crushing together of the solid matter of the earth's crust would develop an amount of heat which, in some cases, would be sufficient to melt the solid rock, and which in many other cases, in connection with moisture would be able to cause the partial dissolving of the rocks so as to allow of the re-arrangement of their materials according to crystallographic laws; or, in other words, the heat alone, or in connection with moisture, and under pressure may cause the crystallization or *metamorphism* of the sedimentary rocks*

The ultimate effect of the folding, just spoken of, would be to cause a series of elevations, with depressions between them, parallel to the sea-shore; and a raising of the general level of these folds above that of the less disturbed region at a distance from the shore, would complete the formation of the mountain chain, and these elevations would be all the more permanent because of the hardening of the sediments composing them, due to metamorphism or crystallization, and the increased power of resistance to the denuding action of the rain and running waters.

This process of folding, crystallization, and the formation of permanent mountain chains is a slow one, extending over ages. I have spoken only of the folding and flexing, and elevation of the strata. In truth, the phenomena are much complicated. During the long period of oscillation, preceding the formation of a mountain chain, the area near the shore is sometimes sinking and receiving accumulated sediments from the denudation of higher lands, sometimes rising and being itself denuded.

The amount of sediments collected in such areas is often very great, being 30,000 to 40,000 feet in thickness in the Appalachian chain, which runs approximately parallel to the Atlantic coast.†

* The degree of heat necessary to cause this change need not be very great; for it is well known from experiments in the laboratory, that hot water when acting for some time upon the most insoluble substances, under pressure, is capable of dissolving them,

† The question "Whence come the great accumulations of sediment which form the mass of the Appalachian chain?" is one upon which the opinions of geologists are divided. It need not be considered here.

From the above hypotheses, one would expect to find a mountain chain approximately parallel to the coast line of every great ocean, and a glance at the map will show that this is the case.

The Appalachian chain, including the Blue-ridge and the Alleghenies and their continuations and terminations in Alabama, is the mountain border of the continent towards the Atlantic.

The movements of the earth's crust which end in producing a permanent mountain chain, are periodic in their nature,—a long continued oscillation, great accumulation of sediment, and finally the crushing together and consolidation of these sediments and the elevation of the whole mass. Of the several epochs of mountain-making on this continent that which occurred at the close of the Carboniferous age, is the one of most interest to us, for at that time the Appalachian chain became a permanent feature of the continent as a mountain range.

TABLE OF GEOLOGICAL FORMATIONS.

The following Table is from Prof. Dana's Manual. A list of the formations occurring in Alabama is appended,
Found in Alabama.

<i>Time.</i>	<i>Epochs.</i>	
CENOZOIC.	<i>Periods.</i>	
	<i>Epochs.</i>	
	Age of Man.	20d. Alluvium..... Alluvium.
		20c. Loam and Loess..... Loam and Loess.
		20b. Port Hudson..... Port Hudson.
		20a. Drift..... Stratified Drift.
		19c. Pliocene.....
		19b. Miocene.....
	Age of Mammals.	19a. Eocene..... Lignitic, Buhrstone, Claiborne, Jackson, Vicksburg, &c.
		18b. Upper Cretaceous..... Ripley, Rotten Limestone.
MESOZOIC.		18a. Lower Cretaceous..... Eutaw or Coffee Group.
		17c. Wealden.....
	Reptilian Age.	17b. Oolitic.....
		17a. Liasic.....
		16c. Keuper.....
		16b. Muschelkalk.....
		16a. Bunter Sand-Stein.....
		15. Permian.....
		14c. Upper Coal Measures..... Upper Measures.
		14b. Lower Coal Measures..... Lower Measures.
PALEOZOIC.	Carboniferous Age.	14a. Millstone Grit..... Millstone Grit. Conglomerate.
		13b. Upper Sub-Carboniferous..... Calcareous, Mountain Limestone.
		13a. Lower Sub-Carboniferous..... Siliceous Group.
		12. Catskill.....
		11b. Chemung.....
		11a. Portage.....
		10c. Genesee..... Black Shale.
	Devonian Age or Age of Fishes.	10b. Hamilton.....
		10a. Marcellus.....
		9c. Corniferous.....
AZOIC.		9b. Schoharie.....
		9a. Canda-Galli.....
		8. Oriskany.....
		7. Lower Helderberg.....
		6. Salina..... Niagara.
		5c. Niagara..... Clinton.
		5b. Clinton.....
		5a. Medina.....
	Silurian Age or Age of Invertebrates.	4c. Cincinnati..... Nashville, or Cincinnati.
		4b. Utica..... Trenton.
		4a. Trenton..... Chazy.
		3c. Chazy..... Quebec, or Knox Dolomite and Knox Shale.
		3b. Quebec..... Calcareous or Knox Sandstone.
		3a. Potsdam..... Potsdam.
		2b. Potsdam.....
		2a. Acadian..... Acadian, or Osceola Conglomerate and Slates.
		1b. Huronian.....
		1a. Laurentian.....
		1. Archean or Eozoic..... Azoic.

III. GEOLOGICAL DETAILS.

THE MIDDLE, OR APPALACHIAN DIVISION.

The southern and southwestern boundary of this division, is approximately a line passing through the towns of Fayetteville, Tuscaloosa, Centerville, Wetumpka, Tallassee, and Columbus, Georgia.

A line drawn on the map from Chattanooga, Tenn., to a point some six or eight miles east of Tuscaloosa, would mark approximately the line of separation between this and the northern division.

This region belongs to the Appalachian System, and we find the strata seldom horizontal, but generally dipping at considerable angles southeast and northwest, the prevailing dip being towards the southeast.

It will be seen by the boundaries above given, that this division of the State includes :

1. The Metamorphic Region.

2. The Coosa Valley and its outliers, viz: The Cahaba Valley, Roup's and Jones' Valley, Murphree's Valley, Wills' Valley, and Brown's Valley.

3. The Coosa and Cahaba Coal Fields.

The Geological Formations represented are:

	{	2a. Acadian.	
	{	2b. Potsdam.	
	{	3a. Calciferous, or Knox Sandstone.	
Silurian.....	{	3b. Quebec, or Knox Shale and Knox Dolomite.	
	{	3c. Chazy.	
	{	4a. Trenton.	
	{	4c. Cincinnati.	
	{	5b. Clinton.	
Devonian.....	{	10c. Genessee, or Black Shale.	
	{	13a. Lower Sub-Carboniferous.	Siliceous Group.
	{	13b. Upper Sub-Carboniferous.	Mountain Limestone.
Carboniferous.....	{	14a. Millstone Grit.	
	{	14b. Lower Coal Measures.	
	{	14a.—Upper Coal Measures—not certainly made out.	
Triassic and Jurassic.	{	16 and 17. Trap Dikes.	
Quaternary.....	{	20a. Drift.	
	{	20b. Alluvium.	

For some reasons it will be more convenient to treat under separate heads, the Metamorphic Region, the Coosa Valley and its outliers, and the Coosa and Cahaba Coal Fields.

The Metamorphic Region.

The Selma, Rome, and Dalton Railroad, from the Georgia Line to Coosa Bridge, runs nearly parallel to the northwestern limit of the metamorphic area, and from six to ten miles distant

from it westward. This irregular line, with another running from near the Shelby Iron Works, through Verbena Station, Wetumpka, Tallassee, and eastward to Columbus, Georgia, and a third made by the boundary line between Georgia and Alabama, enclose a triangle within which are found most of the metamorphic rocks of the State.

As to the *age* of the metamorphic rocks, the opinions of geologists differ materially; by some they are considered pre-Silurian, by others, as the altered sediments principally of the Silurian age.

In my Report for 1874, I inclined to the view that the crystalline rocks in Alabama were pre-Silurian, but I have since had reason to believe that a part, at least, of them are metamorphosed Silurian beds. Until further examinations are made, I shall leave the question of age an open one, except in two instances, viz: Near the northwestern boundary of the metamorphic area, there is a prominent ridge which in all probability, is of an altered Potsdam sandstone ridge, and near Columbus, Georgia, on both sides of the river, are some beds of rock which will probably prove to be Eozoic or Archæan.

The differences between the metamorphic and the unaltered rocks, are patent even to the unpracticed eye, hence the treatment of them under separate heads, even though they should not differ in age, is justified on the score of convenience, if for no other reason.

1st. Metamorphic Rocks.

Mica-Bearing Series.

1. GRANITE. 2. GNEISS. 3. MICA SCHIST: These three rocks have the same composition, being aggregations of quartz, feldspar, and mica. They differ in their structure—the granite being massive, without tendency to split into slabs, the gneiss being distinctly stratified, and the mica schist being like the gneiss laminated, and having besides, less feldspar, more quartz and much more mica—the laminated character being due in great measure to the parallel arrangement of the scales of mica.

4. MICA SLATE, has a composition similar to mica schist, but with smoother surface, the scales of mica not being visible to the naked eye.

5. CLAY SLATE OR ARGILLITE, is a fine grained slaty rock, with the composition of the preceding: a strict line of demarcation between these two cannot well be drawn. Some of these

slates split up readily into smooth plates, which may be used for roofing purposes.

6. **HYDROMICA SLATE.** This rock has a composition similar to mica slate, but it contains a *hydrous* mica, which imparts to the rock a pearly lustre, and a more or less greasy feel like talc. The majority of the so-called talcose slates of this State are hydro mica slates.

Many of the fine grained slaty rocks of this region are impregnated with *graphite* or *plumbago*, some to such an extent that they are used for lubricating purposes.

Hornblendic Series.

1. **SYENITIC OR HORNBLENDIC GNEISS.** This is one of the most abundant rocks in the metamorphic region. It may be defined as a gneiss, in which the mineral *hornblende* takes the place of most of the *mica*.

2. **HORNBLLENDE SCHIST,** a slaty rock composed chiefly of hornblende.

3. **DIORITE.** This resembles syenite, but has a triclinic feldspar instead of orthoclase. In many localities a syenitic gneiss with triclinic feldspar is common. With most of these hornblendic rocks, are associated ores of iron—magnetite and limonite or brown iron ore. Some of these beds are extensive—only one has been thus far utilized.

Hydrous Magnesian Series.

1. **TALCOSE SLATE.** A slaty, soapy feeling rock, composed chiefly of talc, is not common in Alabama.

2. **SOAPSTONE OR STEATITE.** A granular, massive, or schistose rock, of greenish or grayish colors, soft, soapy to the touch. The composition varies, being talc and chlorite, or talc and actinolite, etc. This is quite abundant in some parts of this region, and it is usually associated with other rocks containing chlorite, especially with

3. **CHLORITIC SCHIST,** a slaty rock composed chiefly of scales of chlorite, with some quartz and feldspar.

Quartzose Rocks.

1. **QUARTZITE.** A granular to compact quartz rock, usually of light colors.

2. **SILICEOUS SLATE.** A flinty, slaty quartz rock, very fine grained.

3. **ITACOLUMITE.** A slaty rock composed of quartz grains and a micaceous mineral—the quartz predominating. Some specimens are quite flexible. Associated with this rock are sometimes found gold, diamond, and specular iron. Specular iron is its principal associate in Alabama; but sometimes titanite iron in scales is found with it, making a rather uncommon rock.

4. **JASPER ROCK.** A compact siliceous rock of dull colors, usually red, yellow, or greenish. Associated with the preceding.

Calcareous Rocks.

1. **CRYSTALLINE LIMESTONE, (Marble).** Essentially carbonate of lime, with some impurities, such as talc, mica, etc. Talladega county.

2. **DOLOMITE.** A crystalline, granular rock, composed of carbonate of lime and carbonate of magnesia. Lee county.

2nd. Igneous Rocks.

These rocks occur filling fissures in the stratified crystalline rocks. They are usually rich in iron, and upon the decay of the rock, there results a highly ferruginous clayey mass, the intrusive nature of which can be recognized long after the original rock has disappeared.

The igneous rocks of the State have not yet been much studied, only the two varieties given below have been accurately determined.

1. **DOLERITE.** A moderately fine grained aggregate of pyroxene and magnetite. This has been obtained from near Verbena Station, in Chilton county, and from the vicinity of Auburn.

2. **OSSIPITE.** This is a coarse grained rock composed of labradorite, chrysolite, hypersthene, and titanite iron. This is from a trap dike near Notasulga, and is the second locality in the United States from which it has been obtained. It was first described from specimens from Waterville, N. H. It is an interesting question amongst geologists whether this is an igneous or a metamorphic rock, since if it were metamorphic, the beds would probably be Laurentian. The specimen bears Prof. Tuomey's label, "Trap Dike, from near Notasulga," and I have accordingly given it a place among our igneous rocks.

Stratigraphical Relations.

In a section crossing the metamorphic region from northwest to southeast, the general relations of the strata may be best seen.

The first metamorphic rocks noticed (towards the northwest), are the beds of crystalline white marble with accompanying hydro-mica schists. These form the northwestern boundary of the region. There seems to be very little doubt that the marble is of Silurian age, belonging probably to the Trenton or Chazy subdivision. The belt of marble is found in this position from the Georgia line to the Coosa river below Talladega Springs.

Continuing southeast, the semi-metamorphic slates and conglomerate of the Acadian epoch—(Ocoee conglomerate and slates of Tennessee), are next encountered. These beds are estimated to be from 1,500 to 2,000 feet in thickness, and they are followed by a mountain-forming series of massive quartzites of gray and other dark colors. From the sides of this mountain issue many chalybeate springs. This is probably the metamorphosed Potsdam sandstone. It is a watershed throughout most of its length, and is called in parts of its course, Blue Mountain, and Rebecca Mountain. Talladega Creek is the only stream that cuts through it.

Succeeding these, is a series of rocks including mica schists holding garnets and gneisses, which are often hornblendic. Hornblendic gneisses interstratified with garnetiferous mica schists and fine grained mica slates, characterize the northwestern portion of this belt. Crystalline masses of cyanite associated with hydrous micas and sometimes with graphite are not uncommon.

Many of these rocks have undergone a thorough decomposition in places, by which they have been converted into ferruginous stratified clays, in which the unaltered beds of quartz are prominent. With the above named rocks, occur steatites, chloritic schists and hornblende schist, and there is probably a belt of corundum accompanying. In this region also, are arenaceous schists with scales of hematite, a sort of specular schist, and micaceous schists impregnated with graphite. Tolerably pure graphite has been found in some quantity in the same vicinity.

Next in succession are mica schists with garnets. In this belt the purple tinge of the decomposing rock, and the numerous beds or veins of coarse-grained granite, are characteristic. These granite veins occur in the same association from Georgia to Coosa county, and in very many places show traces of the ancient excavations for mica, which in North Carolina, are considered as infallible indications that mica in marketable quality may be had by re-opening the ancient works. Indeed very fair mica has been obtained in Alabama, at very little expenditure. The mica industry probably needs only capital and experience in its application to become a source of fortune here as it is in North Carolina.

Next is a belt of fine grained mica slates and soft soapy feeling clay slates, often impregnated with graphite, and these are followed by a wide belt of gneisses and mica schists with a belt of what passes for granite. The granite is in places an apparently massive rock, showing little, if any, traces of stratification; yet if followed either way across the strike, it passes into gneiss and mica schists.

Hornblendic slates weathered into ferruginous clays, through which project the indestructible seams of quartz: beds of finely laminated mica slates, in some places almost flexible sandstone, are found on both sides of the granite belt.

Most of these areas of stratified ferruginous clays with quartz veins, have been worked for gold, and there is doubtless yet much gold to be had from the still untouched quartz ledges. Through Dudleyville, in Tallapoosa County, southwest into Coosa, passes a broad belt of magnesian rocks,—soapstones chiefly,—and chloritic rocks associated with corundum.

In Coosa County, the corundum has been altered so that beautiful specimens may be had of six sided crystals with a nucleus of unaltered corundum surrounded by a soft micaceous mineral. Another belt of steatites with chloritic and hornblendic rocks may be met in Chambers County, whence it may be traced northeast into Georgia, and southwest across the Tallapoosa river, a few miles north of Tallassee.

Following our section southwestward we cross mica schists, micaceous quartzites, hornblendic gneisses, and crystalline dolomite to the line where the junction of the metamorphic and cretaceous rocks is hidden by beds of sand and pebbles of quaternary age.

If we accept as proven, the assertion that all our crystalline schists are only the metamorphosed beds of Silurian age, we see in our section a succession of beds of Potsdam sandstone, altered into quartzite and granite; of Quebec shales and dolomite with its accompanying chert, changed into steatites, corundum, hornblendic and chloritic schists, hydro mica slates and micaceous quartzites, which are sometimes true itacolumites or flexible sandstones. The limestone or dolomite of the metamorphic region seldom shows itself above the surface, because of the greater denudation which it has suffered, as compared with the more compact and harder rocks which accompany it; yet in some of the broad and beautiful valleys of this part of the State with their rich calcareous soils, the underlying limestone makes itself known. The shales of the Cincinnati group would appear as

gneisses, hornblendic gneisses, and graphite bearing slates, in the metamorphic region—and the purer limestones of the Trenton group would be found as beds of crystalline marble.

As has been said above, the transition from the unchanged sediments of the Potsdam, Calcareous, Quebec ages, &c., into their metamorphosed equivalents, has not been followed out in this State with such completeness as to justify the unqualified assertion that the metamorphic schists are only changed Silurian strata. Still this equivalence is tolerably well made out in some instances, and it may not be impossible to establish it with regard to most of the strata in question.

Throughout the area of crystalline schists, as in the non-crystalline region northwest of it, the prevailing dip of the rocks is towards the southeast. This uniformity of dip, has probably been brought about by a series of faults or dislocations, by which the strata have been broken apart in bending, and the rocks on one side brought up to a higher geological level. Along the several lines the bending has not been attended with the fracturing of the strata, and the folds are easily recognizable as *anticlinal* (where the strata have been lifted up into a fold with the slope each way from a central line),—and as *synclinal* (where the dip is on both sides towards a central line). The synclinal is simply the trough between the folds, the anticlinal, the crest of the fold.

A synclinal and anticlinal are crossed a few miles southeast from Dudleyville, Tallapoosa County. The soapstone belt in the lower part of Chambers County, and near Tallassee, marks very nearly the line of another synclinal; whilst at Chewacla, and below Auburn, in Lee County, another anticlinal is seen in the micaceous quartzite, and hornblendic gneisses of that belt. Other unbroken folds will probably be detected upon closer study of the region.

It needs scarcely to be stated that the crests of the folds have long since been removed by denudation, and that the presence of anticlinals and synclinals is revealed by the varying dips of the outcropping edges of the beds.

From what was said in the general remarks, it will be understood that the trend or direction of the folds, or of the denuded and exposed edges of the strata, is approximately parallel to the shore line of the Atlantic, or in general, northeast and southwest.

Minerals and Economic Materials.

Building Stones. In the *granites*, *gneisses*, *hornblendic gneisses*,

&c., of this region, we find excellent building material. Mr. Sam Graham's quarry, near Bradford, Coosa county, has furnished some very superior granite. This quarry has been worked, perhaps, more extensively than any other, yet there are many localities in the granite belt where the best material can be had. No railroad, except the Memphis and Savannah, crosses this belt, so that the granite is, comparatively speaking, as yet untouched. The factory at Tallassee is built of gneiss, the lime kilns at Chewacla, of hornblendic gneiss; but lack of transportation has stood in the way of any exportation of the building stones of this region.

For *Millstones*, the same rocks have been much used, and in several localities along the granite belt, millstones have been regularly manufactured, for the market.

Marbles. Near Talladega and Syllacauga, marble quarries have been much worked in the past; but there seems to be little doing there now. The quality of the Talladega marble is well known, and the future will doubtless see it extensively utilized. All along the northwestern limit of the metamorphic region, this bed of crystalline limestone may be found, in some places pure white color, and in others, clouded. The quarries mentioned above are the only ones where much work has been done.

Dolomites. In Lee county, there is an occurrence of white crystalline Dolomite (a mixture of the carbonates of lime and magnesia). This is in appearance much like white marble, and it might be used for grave-stones, and mantels, although rather coarse grained.

Material for Lime Burning. Both the limestones and dolomites are well suited to this purpose. The dolomite of Chewacla kilns in Lee county, yields a most excellent lime. Near Syllacauga in Talladega county, a bed of calcite has been worked for the purpose, and many other localities might be cited.

Soapstone. Several belts of this rock traverse our metamorphic region from Georgia southwest to the Coosa River. Many old excavations, fragments of broken utensils, and traces on the rock from which such utensils have been cut, show that the soapstone was much used by the Indians. In Chambers county, it is worked up into monuments, headstones, &c., at the mill of Mr. William Jackson. As a fire-proof stone it answers well where the heat is not too great. At the Chewacla works it is used as a lining for the lime kilns, and is considered equal to the New Jersey fire-brick. Care must be taken, however, to cut the blocks so as to present a cross section of the grain to the fire—other-

wise it flakes off. In Alabama, soapstone has found very limited use, but its application in the arts are manifold. It is highly recommended for the floors of bake ovens.

For the Manufacture of Glass and Porcelain. A good bed of porcelain clay near Louina, Randolph county, was noticed by Prof. Tuomey. In many localities on the granite belt the decomposition of the feldspar has produced some very fine white clay kaolin. Near Socopatoy, Coosa county, and near Notasulga are two localities where it has been particularly observed. Some of the white friable quartzites, especially in Chilton county, would serve well as a material for glass. In other counties very pure quartz is also found.

Asbestos. This mineral has been found in abundance in Coosa and Tallapoosa counties near the outcrop of corundum. Its use in fire-proof compositions, &c., is well known. The two counties above named are not the only localities where it may be found, for another corundum belt has been noticed in the line of counties northwest of Tallapoosa and Chambers.

Mica. Mica schist with veins of coarse grained granite, occurs in several belts running from the Georgia line to the Coosa river. Along this outcrop are numerous ancient excavations, the large plates of mica about these pits have long attracted attention. In a few localities in Randolph, Clay, and Coosa, some little attempt has been made to get up the mica, but no excavation of any considerable depth has been made. In North Carolina, old excavations precisely like those in Alabama, are eagerly bought up. Mr. Heep, the most successful mica miner in that State, assured me that whenever he had mined in these ancient works, he has never failed to find the best mica. This may be a hint to those on whose land such works occur in this State. There surface digging will not be profitable, for it is probable that the ancient miners exhausted the mica near the surface. This mineral brings very good prices.

Corundum. This mineral has been found in considerable quantity near Dudleyville, Tallapoosa County (see Report for 1874), but generally in detached fragments. Recently it has also been discovered in Coosa County, not far from Bradford. In this place, likewise, it appears to occur in detached fragments and crystals, many of the latter having undergone considerable alteration, and showing a six sided nucleus of corundum enclosed in a shell of a soft grayish micaceous substance. These alterations are very handsome cabinet specimens.

The great hardness of corundum, fits it for abrasive purposes,

and the manufacture of corundum wheels as substitutes for emery wheels, is now a large industry. The Alabama corundum, from the ease with which it may be gotten up, should be brought to the notice of manufacturers. A crystal of corundum 50 pounds in weight has been found near Dudleyville, and is now in the Cabinet at the University.

Zircon. Near Bradford in Coosa County, occur Zircons, nearly transparent, very well crystalized and with a richness of crystalline faces. In the purest and most brilliantly colored varieties, this mineral is used as a gem, the names *jargon* and *hyacinth*, being sometimes applied to it.

Graphite,—is widely disseminated in small quantities in many of the metamorphic rocks, sometimes impregnating aluminous slates to such an extent as to render them suitable for lubricating purposes.

Tolerably pure graphite in good sized masses, occurs in mica schist in Chilton County, not far from Verbena. This occurrence deserves a more thorough examination, since graphite is a valuable substance.

Gold. Most of the gravels and sands, especially of the north-western half of the metamorphic region, have been profitably worked for gold. The Arbacoochee, Pinetucky, and Chulifinnee Diggings, are three well known localities. A few quartz mills are now in operation, and there seems to be no reason why the working up of the quartz seams in this region should not be profitable. Among the gold mills recently, or at present, at work may be mentioned those at Chulifinnee, Pinetucky, near Arbacoochee, at the Haral mine, and at the Riddle & Storey mine, &c.

Copper. The *Stone Hill*, now *Copper Hill* mine, in Cleburne County, is the only copper mine where expensive works have been erected. At that place are several furnaces, &c., for concentrating the low grade ores, which in the early days of the mine were laid aside as unprofitable to ship to Baltimore—for fuller information, see Geological Report for 1875, pp. 184 and ff. In the neighborhood of the mine are several localities where copper ore has been obtained. Other localities for copper are noticed in Prof. Toumey's Second Report and in my Report for 1874.

Manganese,—is found in small quantities in many places, but a deposit of considerable extent is still unknown.

Iron Ores. Magnetite or magnetic ore is of wide distribution. Fragments of this ore of large size indicating a good seam have been noticed in Clay County (for analysis, see Report Geology of

Alabama for 1874, p. 59). This ore compares favorably with the Roan Mountain magnetite of North Carolina, and will probably be largely worked in the future. The inaccessibility of these regions stands in the way of the developement of the iron ores. Near Wedowee, in Randolph, in Chambers and Coosa Counties, &c., magnetite is found in considerable quantities, but no active search for iron ore has been made except in the vicinity of railroads.

Hematite or specular ore is common in many of the rocks, but no large deposits of it are known.

Limonite or brown iron ore is very abundant, in many cases as "gossans," i. e. the result of the decomposition of pyritous ores. Often, however, the limonite appears to be of different origin, as in Clay, Chilton Counties, etc., where it has been used to some extent in old fashioned forges. Most of the iron ores, except some of the limonites, are associated chiefly with the hornblendic rocks.

Pyrite.—Extensive beds of iron pyrites are known in Clay county, but they have not been much worked up.

It may be proper here once more to call attention to these beds of pyrite as material for the manufacture of *Sulphuric Acid*. Most of the copper ore of the State is pyrite, with a certain percentage of copper. In concentrating the copper, the sulphur of the pyrites is allowed to go to waste. In the English works, this is utilized in the manufacture of sulphuric acid, and the profits upon this alone pays well, whilst the copper and iron also, are pure gain. With capital sufficient to provide for the manufacture of sulphuric acid also, the copper works might be made to pay a much greater profit than they do now.

Rutile, or titanic acid is a mineral of pretty general occurrence. Good specimens have come from Coosa and Chilton counties. Its uses in the arts are limited; but it is valued as cabinet specimens. Well crystalized specimens will command a ready sale.

Tantalite. This rare mineral has been found for the first time in the United States, in Coosa county, near Rockford.

The Coosa county *tantalite* has been analyzed by Dr. J. Lawrence Smith, of Louisville, Ky., with the following result:

Specific gravity.....	7.305 to 7.401	
Composition in 100 parts.		
Tantalic acid.....	79.65	} 81.62 metallic acids.
Tungstic "	1.10	
Stannic " .....	.87	
Manganese protoxide.....	3.72	
Iron protoxide.....	13.51	
Copper oxide.....	.89	

The tantalie acid contains very little columbic acid.

This mineral has not been found in sufficient quantity to have had any practical use made of it in the arts. It is, however, much desired by collectors of minerals; and specimens, especially of crystalized, will command a ready sale and a good price.

The Coosa Valley.

The wide limestone valley lying between the metamorphic area, on the one side, and the southeastern edges of the Cahaba, and Coosa Coal Fields, and Lookout Mountain, on the other, has received the name above given, the Coosa river running down its whole length. Geologically, it is the continuation of the Valley of East Tennessee and the Valley of Virginia. Indeed, this valley, which has been described by Prof. Safford, as a complex trough, fluted with scores of smaller Vales and ridges, extends at least from the Susquehanna to Middle Alabama. As is the case in East Tennessee, so in Alabama, this valley has the Appalachian characteristics, viz: "It is closely furrowed with parallel valleys and ridges, all tending to the northeast and southwest." The main valley with the limits defined above, is from 15 to 30, or 35 miles wide. It has, however, several outliers which will properly be treated in connection with it. The outlying valleys, are: (1). The Cahaba Valley, lying between the Coosa and Cahaba Coal Fields. (2). Roup's, Jones' and Wills' Valley. (3). Murphree's Valley. And (4), the Blount Springs Valley, or Brown's Valley, which is only the prolongation into Alabama of the great Sequatchee Valley of Tennessee.

We shall describe these valleys in connection with the Coosa Valley.

Stratigraphical Relations.

To obtain some idea of the geological structure of this part of the State, we must refer back to the general remarks on a preceding page. When the Appalachian region was uplifted, pressed into folds, and these folds in places broken, producing what are called faults or dislocations—that part of the region lying nearer the Atlantic coast was much more profoundly disturbed than the part lying further off towards the northwest; and whilst in this latter part the strata were scarcely thrown out of their original horizontal position, or at most, were thrown only into gentle undulations, in the former part we find the rocks pressed up into folds, and in many places, these folds broken

along the crest line and the strata on one side of the break pushed up past those on the other, so as to bring to the level of the beds on one side of the fault, other beds many thousand feet below them originally.

The line passing through Columbiana, Greenport, and Gadsden, to Georgia—or more accurately, a line running along the southeastern border of the coal fields—marks the position of one of these great faults, where the Lower Silurian rocks on the one side are brought up to the level of the Coal Measures on the other.

Southeast of this line the rocks are Silurian, they dip generally southeast, by reason of successive breaks or faults, i. e., because none of the folds into which the strata were thrown remain unbroken.

The chain of high hills or mountains running nearly parallel to the S. R. and D. R. R., part of the time on one side and part on the other side of the road, and close to it, dividing the valley into two parts, is of sandstone of the Potsdam formation. These mountains are usually lined on the southeast side by a strip of Calciferous sandstone and Quebec Shales, which pass into the great Quebec Dolomite formation which is in this part of the State, some six or eight miles wide.

Between the Potsdam sandstone hills and the Coal Measures, we find strata of the Dolomite occupying a large strip—and succeeded by a narrow band of Quebec Shale and Calciferous sand stone, which are brought up by faulting to the level of the coal.

We see, therefore, in this Silurian area two great faults, which extend for many miles beyond the limits of the State. 1st. That on the edge of the coal fields, where the Calciferous sandstone is brought up to the coal, and 2d, that along the line of the Potsdam sandstone, by which this formation is brought up to the level of the Quebec Dolomite. Without a figure or a map,* an explanation is difficult, but may be attempted by the following table where the formations are lettered and numbered as in the table above:

14. Coal Measures (Hills.)

Fault.

3a. Calciferous Sandstone, (sharp ridge.)

3b. Quebec Shale and Dolomite, (Valley 8-12 miles wide.)

Fault.

2b. Potsdam Sandstone, (mountains or high hills.)

3a. Calciferous.

* The Geological map accompanying this book was ordered subsequently to the time of writing this.

- 3b. Quebec. }
 3c. Chazy. } Valley, 6-8 miles wide.
 4a. Trenton. }
 Fault.
 2a. Acadian, (mountain or high hills.)
 Metamorphic rocks, (mountain forming.)

By this table it is meant, that in going from the coal fields in a southeastern direction to the metamorphic region, one would cross successively the formations, and in the order given above.

On the southeastern edge of the Silurian area, I should have mentioned a third great fault seen in the table above, bringing the Acadian slates and conglomerate to the level of the Trenton or Chazy limestone. It is along the line of this fault that we find the bed of marble—probably the result of the metamorphism of the Trenton or Chazy limestone.

As the greater portion of this wide Silurian belt is made by a single formation—the Quebec or Knox Dolomite—it is particularly rich in iron ores, (brown ore chiefly,) but the description of the ores will be given below under another head.

2a. Outliers of the Coosa Valley.

These have already been incidentally mentioned as (1) The Cahaba Valley, between the Coosa and Cahaba Coal Fields. (2) Long Valley, which is known under the names of Roup's, Jones', and Wills' Valley, and which separates the Cahaba from the Warrior Field in its lower part (Roup's and Jones' Valley), and Sand Mountain and Lookout Mountain, in its upper part (Wills' Valley). From near Tuscaloosa to Village Springs, Roup's and Jones' Valley is a single anticlinal. At the latter place it divides, one prong of it reaching up into the Sand Mountain, under the name of (3) Murphrees' Valley, whilst the eastern prong merges into the Cahaba Valley near Ashville, and into Coosa Valley further northeast. Wills' Valley begins near Attala, and extends northeast into Georgia and on to Tennessee. The line of the Alabama and Chattanooga Railroad (now the Alabama Great Southern), follows this complex valley or series of valleys. (4) Brown's Valley is the Alabama end of the great Sequatchee Valley of Tennessee. There are other small valleys of similar structure, which need not be further mentioned.

A strip of country from 35 to 40 miles wide, lying between the eastern edge of the coal fields and a line running from Tuscaloosa northeast through Blount Springs to Stevenson and thence into Tennessee, is made up of bands of coal measures, separated by these valleys, which are narrow troughs in which are exposed

strata of the formations below the coal, down to 3b the Quebec Dolomite.

The explanation of this is simple. We have to consider all these wholly or partially separated bands of coal measures, as originally continuous, and horizontal in position. During the period of the Appalachian disturbances, these, together with the formations underlying them, were pushed into a number of folds of greater or less length, and approximately parallel, and having the general direction northeast and southwest. In some of these folds the strata were entirely broken apart and one side pushed up over the other, making faults. Other folds were broken only superficially along the crest line, as a piece of stiff pasteboard may be broken by bending it into a sharp fold. The cracks produced by these partial breaks, afforded an easy channel for denuding waters, and in the course of time these waters have cut down and widened out these cracks into valleys, sometimes five or six miles in width. The denuding waters have cut through the surface stratum of coal measures, and down into the underlying Silurian rocks, generally as far as the Quebec Dolomite.

Peculiarities of these valleys are, that they have been cut down in the tops or crests of the ridges or folds, that the strata on each side slope in opposite directions away from the central line of the valley, i. e., they are anticlinal valleys, and that they are higher than the coal measures on each side, so that the streams that rise in them soon break through the rim on one side or the other, and flow into the lower lying coal fields.

The valley separating the Cahaba and the Coosa coal fields, is caused by a break or fault. Roup's, Jones', Murphree's, Wills' and the great valley running from Blount Springs to Stevenson, and thence into the State of Tennessee, called, in Alabama, Brown's Valley; in Tennessee, the great Sequatchee Valley,—these are true anticlinal valleys; they occupy the summit of great folds, which summits have been removed by denudation, leaving only a moderately elevated rim of the hard sandstone or conglomerate, which underlies the coal measures, on each side. This rim is broken through in many places, by the streams which rise in the valley and flow into the coal fields.

The strata in this whole region slope in general towards the southeast, except on the northwestern sides of the anticlinals where the slope is northwest: and even in these parts the southeast dip or slope often prevails by reason of the overturning and overlapping of the strata. Details concerning these interesting

points in the structure of Roup's and Jones' valley may be found in my Report for 1876.

A section across the Cahaba valley is as follows:

- 14b and c. Coal Measures, (Cahaba fields).
- Fault.
- 3a. Calciferous, (Knox Sandstone).
- 3b. Quebec, (Knox Shale and Knox Dolomite).
- 3c. Chazy.
- 4a. Trenton.
- 13b and a. Sub-Carboniferous.
- 14a. Millstone Grit or Conglomerate.
- 14b. Coal Measures, (Coosa field).

In this section, the absence of the Clinton and Black Shale, is noteworthy. If they are present at all, it is only in a subordinate way, and so far as I know, they have not yet been detected in the valley.

Another notable feature is the fault or displacement which brings the Calciferous sandstone to the level of the Coal Measures. This great fault may be well seen at Helena.

In crossing one of the *anticlinal valleys*, above named, the following formations are met, in the order given:

- 14b. Coal Measures.
- 14a. Millstone Grit or Conglomerate.
- 13b and a. Sub-Carboniferous.
- 10c. Black Shale.
- 5b. Clinton.
- 4a. Trenton.
- 3c. Chazy.
- Lower Formation—3b. Quebec or Knox Dolomite, forming most of the "floor" of the valley.
- 3c. Chazy.
- 4a. Trenton.
- 5b. Clinton.
- 10c. Black Shale.
- 13a and b. Sub-Carboniferous.
- 14a. Millstone Grit or Conglomerate.
- 14b. Coal Measures.

In this section, two things are noticeable. 1st. The formations are repeated on each side, the lowest formation being in the center of the valley, thus indicating its anticlinal structure, and 2d. The absence of the formations between 13 and 10c., and between 10c. and 5b., and between 5b. and 4a. Some of these occur in other parts of the State, but the whole Devonian, except 10c., is absent in Alabama.

Lithological Characters and Useful Materials of the Formations.

2b. Potsdam Sandstone.

The great mass of the rocks of this formation is made up of

fine-grained conglomerates, heavy-bedded sandstone, and sandy shales. It is emphatically a mountain making formation, some of the highest and most picturesque mountains of the State being made of the rocks of this age.

The only material of economical value is the sandstone itself which makes a durable building stone. Many chalybeate springs issue from the sides of the mountains of this formation, the Chocco Springs near Talladega being a type.

3a. *Calciferous or Knox Sandstone.*

The characteristic rock of this formation is a calcareous sandstone, sometimes thick, sometimes thin-bedded. The sandstone layers often alternate with others of dolomite, of gray color and rough surface usually. With the sandstones are sometimes associated shales of brown, chocolate, yellow, and other colors, the sandstones themselves having similar colors. These rocks form commonly sharp, well defined, roof-like ridges of no great width.

A few unimportant beds of limonite or brown iron ore are found at various localities in this formation—but the great ore bearing group of the Silurian is the Dolomite.

3b. *Quebec or Knox Shale and Knox Dolomite.*

The bright colored, yellow, buff, brown and reddish, calcareous shales of the lower part of this formation are highly characteristic and easily recognized. The shales alternate with layers of limestone and dolomite, and the calcareous beds become more prominent near the junction with the Dolomite, a line between the shale and the Dolomite being an arbitrary one lithologically.

The shales are found commonly as a narrow belt, adjoining the sandstone. No useful material except some small beds of limonite.

The upper part of this formation is chiefly calcareous.

Above the shales come beds of blue limestone succeeded by thick beds of gray dolomite, crystalline, sometimes sandy and usually associated with much chert. The presence of chert in the dolomite gives rise to the numerous rounded ridges which are characteristic. Where the dolomite is much charged with sandy matter it resists denudation and may be found forming small ridges, etc. The exposed surfaces of the dolomite are often rough with crossed furrows, as if the rock had been hacked.

In the upper part of the dolomite are some layers of an impure blue limestone which has been used for lithographic purposes with some success.

The chert in angular fragments forms the surface over a considerable part of the area.

Where the dolomite is free from the chert we have broad valleys, characterized generally by deep red colored clay soils which are quite fertile.

This is the most massive calcareous formation in the State, nearly the whole of the Coosa Valley, with the exception of the narrow ridges of Calcareous Sandstone and the sandstone chains of Potsdam age, being formed by it. Part of the valley where the chert predominates is sterile and not much inhabited, and timbered with pine. Other parts more calcareous, are fertile, thickly inhabited and belong to the choice farming lands of the State.

The greater part of the outlying valleys above described has the Dolomite for the surface formation.

Besides the lithographic stone, and beds of black limestone, with veins of white calcite, which can be worked into handsome slabs, &c., may be mentioned the following useful materials:

Barite or Heavy Spar, is found in veins in many localities in this formation; it is used chiefly for mixing with white lead to form white paints, as Hamburg White, Dutch White, &c.

Black Oxide of Manganese, is a common companion of the brown iron ores. It has been found in some quantity near Woodstock, in Bibb county, and also near Anniston, Calhoun county. At the latter place it has been utilized in the manufacture of *spiegel-eisen*, in the Woodstock furnace. A very extensive bed of this ore is still to be found.

Galenite or Lead Ore. Near Jacksonville, Calhoun county, this mineral has been found impregnating the dolomite. The locality was worked some years ago, but no paying vein of the ore uncovered. Fragments of this ore are picked up occasionally, in all parts of the State; but such pieces have probably been accidentally thus scattered.

Limonite, or Brown Iron Ore. This is the characteristic mineral of the formation. Beds of this ore are sometimes found in some of the other formations of the State, but they sink into insignificance when compared with the ore banks of this great limestone formation.

The ore is usually found in pockets or irregular masses, imbedded in clays, generally of deep red color. There is no indication of stratification, but the ore is as if dumped into its present position. Everything goes to show its concretionary origin, (see further Report for 1875, p. 23, &c.)

Most of the ore which has been analyzed, contains too much

phosphorus to be of use in making Bessemer steel, but for foundry iron, and commercial bar and rails, it is most admirably adapted. A few very extensive ore banks, however, yield an ore with the small per centage of phosphorus which fits it for material for Bessemer metal.

Comparatively few analyses of the ores of this State have as yet been made, and what will be the developments of the future in the matter of ores free from phosphorus, we cannot say. Most of the published analyses of Alabama ores will be found in the Reports for 1874, 1875, and 1876, and in Mallet's Report in Toumey's second Report.

From these, the quality of the ores may, I think, fairly be judged. So much for the quality; as to the quantity of ore, it may be stated in general terms that strings of these pockets of ore run through all the belts of this formation, from Bibb county to Georgia. In some places the pockets are small, in others, as near as Tannehill, on the Great Southern Railroad, and east of Oxford, Calhoun County, and in many other places near the line of the metamorphic rocks, these accumulations of ore are enormous, making large hills from which the ore may be taken without trouble. Every geologist who has at all examined the ore deposits of this State, has been impressed with their great extent.

It is customary to speak of these accumulations of ore as *inexhaustible*, but the truth is the extent of them is not at all known except in a few instances. In those localities where the ore makes the greatest show on the surface, it is not known how deep it extends. The pockets of ore seem to be entirely independent of the bedding of the rocks underlying them, and of comparatively recent origin, i. e. in their present condition. For these reasons I think the term *inexhaustible* ought to be used with caution, until as much is known of the actual thickness of the deposits, as of their superficial extent.

From a carefully prepared paper on the Iron Interests of Alabama, by Hon. B. B. Lewis, read at the Blount Springs Convention, in 1877, I take the following tabular view of the composition of some of our best brown ores. The analyses have been compiled from the Geological Reports and other always reliable sources.

Analyses of ores from Roup's Valley, from average samples gave:

	1	2	3	4	5	6	7
Metallic Iron	58.75	59.00	40.27	59.15	52.55	58.01	50.68
Phosphorus	trace.	trace.	trace.	0.25	none.	trace.	0.12

The analyses were made by Prof. Roeper, of Lehigh Univer-

sity, by Prof. Lupton, of Vanderbilt University, and by Dr. Drown, of Lafayette College, Easton, Pennsylvania, and are given in full in my Geological Report for 1875.

The analyses of some of the Calhoun, Talladega, and Shelby County limonites, are as follows:

	1	2	3	4	5	6	7	8	9	10	11
Metallic Iron	59.02	57.71	48.45	47.69	60.00	48.25	54.28	58.89	57.99	55.20	56.19
Phosphorus	trace	trace	0.04	0.02	0.05	0.06	0.13	0.09	0.06	0.16	0.05

The first five are from the ore beds of the Woodstock Company, and made by Prof. Mallet of University of Virginia, the rest by Prof. Britton, myself, and Dr. Chandler of New York.

From the same paper I quote:

In addition to these chemical tests, we have the proof of actual experience. At the rolling mills of the Central Iron Works, at Helena, in this State, we have worked the pig-iron made of the ores of Calhoun, Shelby, Jefferson, Tuscaloosa, and Bibb Counties, and have found no tendency to cold short.

Polishing Powder. "Tripoli." The chert of this formation is found occasionally in the State of a very fine almost impalpable powder, when it is a fine substitute for tripoli.

Springs, etc. Throughout this formation the limestone has been more or less weathered, and subterranean water courses, caves, big springs, and lime sinks are of constant occurrence.

3c. Chazy, and 4a Trenton. Most of the limestone used for lime-burning, particularly in Shelby county, comes from the Trenton or upper Chazy—the absence of fossils rendering the exact determination of the age difficult.

5b. Clinton. In Tennessee, this is called the Dye-Stone formation, whilst in this State it is known as the Red Mountain Group. It is composed chiefly of sandstones and red iron ores. A section of the ore bearing part of this formation was made by Mr. L. S. Goodrich, near Birmingham. He recognizes two distinct bodies of ore separated by about sixteen feet of sandstones. The uppermost of these ore bodies is about two feet thick, and is not known to hold any considerable bed of ore fit for use.

Below the sixteen feet of sandstone, comes the workable bed made up of seven strata of ore interbedded with thin bands of shale.

His section, beginning at the top and descending, is:

1. No. 1 ore.....	7 feet, 3 inches.
2. Trace of shales and pebbles.....	
3. No. 2 ore.....	8 "
4. Shales.....	0 " 3 "
5. No. 3 ore.....	2 " 3½ "
6. Shales.....	0 " 0¾ "
7. No. 4 ore.....	1 " 2 "
8. Shales.....	0 " 1½ "
9. No. 5 ore.....	1 " 2½ "
10. Shales.....	0 " 2 "
11. No. 6, ore.....	0 " 11 "
12. Shales.....	7 " 0 "
13. No. 7 ore.....	1 " 3 "

Below these are forty to sixty feet of argillaceous sandstones, followed by limestone of Trenton age.

The ores from this vicinity are used by the Oxmoor furnace in conjunction with brown ore from Roup's Valley.

Analyses of the red ores from the section given above may be seen by referring to my Report for 1876, page 40.

10c. *Black Shale*. From this formation spring most of the sulphur waters of the State, as at Blount Springs, Talladega, Shelby, Saint Clair, etc.

13a and b. *Sub-Carboniferous*. This formation presents two members, one siliceous, the other calcareous. The latter furnishes good limestone for limeburning, and also for mixing with ores in the furnace.

Occasional beds of *limonite* or brown iron ore are found in this formation; but most of the ores which have been analyzed show a rather large percentage of phosphorus. In other states sub-carboniferous ores are extensively utilized, but with us, they will scarcely be much used until the great beds of the Lower Silurian have been worked up.

Kaolinite or *Halloysite*. A compact, moderately hard, often semi-translucent substance near Kaolinite or Halloysite, is found in this formation in several places, as in North Alabama, near Huntsville; in DeKalb county, near Sulphur Springs Station. At the latter place the clay is mined extensively by a firm from Chattanooga. It is used for the manufacture of fire-brick and other articles which are to be subjected to intense heat.

14a. *Millstone Grit*. A massive sandstone, or conglomerate which is found just below the coal in nearly every locality where the coal occurs, has received this name, which is here retained for convenience. The character of this rock (it is nearly pure silica,) renders it particularly fit for lining the hearths of blast furnaces which are exposed to very high temperature. At the Oxmoor furnace it has been tried with great success. For building purposes it would be exceedingly desirable, but for its hardness and the difficulty with which it can be worked up.

14b and c. *Coal Measures*. The three coal basins in the State are named from the three streams which drain them, the Coosa, the Cahaba, and the Warrior Fields.

The Coosa and the Cahaba Coal Fields.

Whilst it is probable that our three coal fields were once continuous, and that they have been separated by folds (since denuded) and faults, just as we see on a smaller scale, parts of the

great Warrior field separated by narrow valleys of Silurian rocks, still, since the Coosa and Cahaba fields exhibit the Appalachian characteristics most strongly, the beds being generally inclined at a tolerably high angle (35° or more), they come more properly under our middle or Appalachian division, whilst the Warrior field, as a part of the great table land especially in its upper part, with its almost horizontal strata belongs to our Northern division.

Coosa Field. This field was formerly estimated to contain about 100 square miles, but the Survey in 1876, established the fact that it extends much further south and west than the limits usually allowed to it on the maps. Its southwestern boundary is in fact, about the line of the S. and N. Ala. R. R. from Siluria down to Calera, and thence eastward nearly to Columbiana, and I may here state that the Carboniferous rocks are found south of the Shelby Iron Works. Very little is known of the capabilities of this field, beyond the fact that there are at least three beds of coal of workable thickness—(3 ft., 4 ft., and 3 feet 6 inches.) The Broken Arrow Coal has at least a local reputation for good quality.

Cahaba Field. In the account of this field, I am greatly indebted to Mr. R. P. Rothwell, and to Mr. T. H. Aldrich, for information furnished by them. The two sections across this field, which are best known, are (1), that along the line of the S. and N. Ala., R. R., and (2), that along Four Mile Creek, in the southern part of the Field.

The section along the S. and N. R. R. is nearly as follows, beginning at Top—it must be remarked, however, that the section is only approximate, there are still many doubtful points:

COAL. <i>Conglomerate Top Seam</i> , irregular and not workable on S. and N. R. R., but further south it grows better, and increases in thickness to 3 feet. One or two other seams come in above it, lower down (south) in the field.....				2 feet 0 inches.
Sandstones, Shales, etc.....	115	"	0	"
COAL. <i>Helena Seam</i>	4	"	0	"
Shales, and Sandstones.....	79	"	0	"
Conglomerate.....	50	"	0	"
COAL. <i>Conglomerate Seam</i>	3	"	6	"
Sandstones, etc.....	65	"	0	"
COAL. Small seam, not much known.....				
Sandstones, Shales, etc.....	57	"	0	"
COAL. Small seam, not much known.....				
Sandstones, Shales, etc.....	59	"	0	"
COAL. <i>Little Pittsburg Seam</i>	2	"	0	"
Shales, Sandstones, etc.....	28	"	0	"
COAL. <i>Moyle Seam</i>	2	"	0	"
Sandstones, Shales, etc.....	217	"	0	"

COAL. <i>Black Shale, or McGinnis Seam</i>	2	"	6	"
Sandstones, etc., with 3 small coal seams.....	125	"	0	"
COAL. <i>Buck Seam</i>	3	"	6	"
Sandstones, Shales, etc.....	215	"	0	"
COAL. <i>Shute Seam</i>	4	"	0	"
Sandstones, and other measures.....	45	"	0	"
COAL. <i>Byram Seam</i> , quality of coal not known	2	"	6	"
Sandstones, Shales, etc.....	130	"	0	"
COAL. <i>Cahaba Seam</i> , (<i>Wadsworth Seam</i>).....	3	"	0	"
Sandstones, Shales, etc....	30	"	0	"
COAL. <i>Whetrock, or Shortridge Seam</i>	2	"	6	"
Sandstones, etc., (about 125 feet below Cahaba Seam is a bed of Shale with marine fossils, an important horizon).....	243	"	0	"
COAL. Of poor quality, but not much known about the seam.....	4	"	0	"
Sandstones, Shales, etc.....	500	"	0	"
COAL. Very little known	3	"	0	"
Sandstones, etc.....	250	"	0	"
COAL. <i>Gould Seam</i>	3	"	6	"
Sandstones, Shales, etc.....	50	"	0	"
COAL. Small seam, very little known.....				
Sandstones, Shales, etc., of the Lower Measures down to the "Millstone Grit," thickness not known				

From Mr. Aldrich's article in my Geological Report for 1875, and from other sources, I take the following notes concerning the seams above given:

The Helena Seam. This seam has a good hard roof with shale bottom. The coke made from this seam is only average in quality. The extreme purity of this coal, chemically, together with its structure, warrant the conclusion that it would probably work raw in the furnace. The analysis is found in Mr. Rothwell's tables, (Report for 1875, p. 58).

Conglomerate or Beaver Dam Seam. This seam was extensively worked during the war. The coal is excellent in quality, and occurs in a single bench with shale top. Thickness from three feet to three feet six inches.

Little Pittsburgh Seam, was opened by Messrs. Raney and Holmes. Analysis given in Geological Report for 1875, p. 58.

Moyle Seam. Opened by Messrs. Moyle and others, at the Southern Mines.

Section of the seam is as follows:

Top. Fire Clay.

Coal.....	1	foot	3	inches.
Fire Clay.....	0	"	5	"
Coal.....	0	"	8	"
Fire Clay.....	3	"	0	"

Analysis in Report above cited.

Black Shale Seam. This seam has recently been opened by the Eureka Company. In January, 1877, the mine was started,

(Eureka No. 2.) Upon cutting the seam it was found to average over 4 feet in thickness. Their mine now is capable of a daily output of 300 tons, and as the Company are running a tunnel 180 feet back to the Buck seam, they can soon, if needed, bring their production up to 500 tons per day.

The slope is 24 feet wide, down 130 feet. It has two hoistways, pumpway, and manway, and is now down about 500 feet. There are three headings turned off from the slope. The coal is mined "on the run." It is very hard, breaks with a conchoidal fracture, and makes a good fuel. The average production of the Company is 250 tons per day.

The large lump coal is sold for domestic purposes, the smaller sizes go to the coke ovens, and the fine and slack go to the washing machine.

The washing machine has lately been put up. The process for washing the coal is that known as Slutt's, with modifications. After washing, the coal is dumped into cars and thence carried to the coke ovens. The coke ovens are about one hundred in number, 12ft.x6ft., and of the "bee hive" pattern. The coke supplies the Eureka furnace at Oxmoor.

The Buck Seam is said to contain from eleven to twelve per cent. of ash, but is a very good coal for domestic purposes. The Eureka Company have tunneled back to this seam from the Black Shale Seam, Eureka Mine No. 2.

Shute Seam. This is a double seam having a band of slate or fire-clay in the middle. It has never been worked but shows itself to be a good hard coal at the openings made upon it.

Wadsworth Seam. This is considered to be identical with the Cahaba seam. At the Wadsworth or Eureka mine, (No. 1) the machinery, shoots, and buildings are arranged for a very extensive business and are well worthy of examination.

The coal is a fine coking coal and the coke is used at the Eureka furnace at Oxmoor.

The Cahaba Seam is repeated three times by reason of the foldings to which this part of the field has been subjected.

The Davis and Carr mine is upon the south dip of this seam, and the Cahaba mine, upon the north dip, the two openings being about one-fourth of a mile distant from each other, on the line of the railroad. The seam averages about three feet and has an excellent roof. The Wadsworth Mine or Eureka No. 1, is some distance from the South and North Railroad, but connected with it by a branch road.

Whetrock or Shortridge Seam, is about two feet, six inches in

thickness without any shale partings. The Eureka Company have tunneled back to this seam from their Mine No. 1.

Gould Seam. The coal is in a single bench; thickness three feet, six inches. It is soft, friable, and crumbles in handling, dull black in color, cokes well, is easily mined, but the roof is soft, and the seam irregular, often accompanied by considerable "mining."

Fuller details concerning these seams, together with analyses of most of the coals, can be found in the Geological Report for 1875, in Mr. Aldrich's article, and the paper by Mr. Rothwell.

The new mine No. 2, of the Eureka Company, has been opened and the extensive works for washing and coking, have been erected since the publication of the last Geological Report, hence they have received a more extended notice.

The section along Four Mile Creek, shows the following seams of coal—going from the Montevallo Series, northwestward:

Upper or Montevallo Group.

- | | |
|---|-------------------|
| (1.) Two or three seams not much worked, aggregating about 7 or 8 feet of coal... | |
| (2.) Shaft seam..... | 4 feet, 0 inches. |
| (3.) Cooper seam..... | " 0 " |
| (4.) Dodd seam..... | 4 " 0 " |
| (5.) Montevallo seam..... | 2 " 6 " |

The seams of this group are found on the southern and south-eastern edges of the Cahaba Field; they dip at a high angle, nearly vertically towards the southwest and south; but there is also a small basin, known as the Montevallo basin, formed by several of the lowermost beds of this group.

The highly inclined series begins in the southwest quarter of Section 19, Township 22, Range 3 West, runs in a southwesterly direction for about three miles to the southeast quarter of Section 2, Township 24, Range 11 East, of Lower Survey, thence due west for three miles to Section 5, then turning a little towards the southwest again, they disappear near Alligator Creek. A small patch of a still higher series, is found in Sections 5 and 6 of Township 24, Range 12 East; but these seams are too close to the great fault which cuts off the Coal Measures, to be of much value.

Then follow several thousand feet of barren measures, in which no coal has yet been found, and then the seams of the

Lower or Cahaba River Group.

- | | |
|----------------------------|-------------------|
| VIII. Seam..... | 3 feet, 6 inches. |
| VII. Seam, Thompson's..... | 7 " 0 " |
| VI. Seam, Gholson's..... | 4 " 0 " |
| V. Seam, Coke Seam..... | 3 " 6 " |
| IV. Seam, Big Seam..... | 8 " 6 " |
| III. Seam..... | 3 " 6 " |
| II. Seam..... | 4 " 0 " |
| I. Seam..... | 4 " 0 " |

The thickness of the measures between the various seams above named cannot be given with accuracy at present, and in addition to the above there are probably other workable beds.

Most of the mining in a systematic way, has been done in the Upper or Montevallo group. From Mr. Aldrich's Paper, Report of Survey for 1875, most of the following notes have been taken.

Montevallo Group.

Shaft Seam. This seam was opened by the "Alabama Coal Mining Company." A slope was sunk 175 feet; at 150 feet depth headings were turned off east and west. Operations were continued by this Company till about 1860, when various difficulties, want of market, etc., led to the abandonment of the mine.

Montevallo Seam. Most of the work in the Montevallo group has been upon this seam. Openings were made and worked at various points. Wood's Pit, the Fancher Pit, Irish Pit, Brown's Openings, were worked by the *Montevallo Coal Mining Company*, the *Central Mining and Manufacturing Company*, the *Cahaba Coal Company*, and the *Mobile and Selma Coal Mining Company*. The latter Company built a branch road from the Selma, Rome, and Dalton Railroad, erected shoots, etc. In 1873, the mines at the Brown Opening were leased to T. H. Aldrich, who still continues work there. At present, no mining is done in the Montevallo group except by Mr. Aldrich. The amount of coal raised by him in 1877 was about 22,500 tons of 2,000 pounds each.

Mr. Aldrich's mine is upon the Montevallo seam in the basin. A drift has been carried in 2,800 feet: at 1,300 feet from the mouth of the mine, a slope of 300 feet depth has been sunk down the dip. At the head of the slope a chamber for 40-horse engine and boilers has been cut out of the "solid"—communication with the surface being by a shaft through 130 feet of hard conglomerate.

In this connection it may be stated that 600 feet below the Montevallo seam, there is a bed of conglomerate 50 feet in thickness.

Cahaba River Group.

Many openings were made by the Confederate government, and other parties during the war, in these seams, especially in the vicinity of the river. No work has been done there since. The principal openings beginning with the southern-most are:

VII. *Thompson Seam.* Thompson's Upper Mine and Herndon

Mine, one and a half miles northeast of the Thompson Mine. Near the Herndon Mine, openings were also made upon the seam underlying the Thompson.

VI. *Gholson Seam*. Thompson's Lower Mine. Coke was made in the open air from this coal, and hauled to the railroad. A large amount of coal is still lying at the mouth of the pit, and the excellent quality of the coal is shown by the fact that it burns freely in grates, after years of exposure to the atmosphere.

At the Gholson mine, and at several points further north, in S. 29, T. 21, R. 4 W., this seam has also been opened and worked; the coal making an excellent quality of coke. The underlying seam was also worked at these openings.

V. *Coke Seam*. At the Coke Seam opening in SS. 12 and 13, T. 22, R. 5 W., near Daly Creek, a large quantity of coke was made.

IV. *Big Seam*. This seam was opened by Mr. Geo. H. Gardner, on Little Ugly Creek: but the coal proved too soft to be of much value.

The inaccessibility of these Cahaba River beds has prevented their further development, and until the river shall be made navigable, or a railroad built through this region, these beds will probably lie untouched.

THE NORTHERN DIVISION.

This includes the Warrior Coal field together with its prolongation and outliers—Sand Mountain, and Lookout Mountain, the Valley of the Tennessee, and the outlying spurs of the Cumberland Mountains which lie north of the Tennessee.

The geological formations represented in this part of the State, are, beginning with the lowest and leaving out of consideration the outliers of the Coosa Valley which divide the coal measures into bands or strips:

- 4c. Cincinnati.
- 5c. Niagara.
- 10c. Black Shale.
- 13. Sub-Carboniferous.
- 14. Conglomerate and Coal Measures.
- 20a. Drift.

We may consider the northern part of this region as an elevated table land of Coal Measures from which the Tennessee river by denudation has removed a vast amount of material, cutting down through the Sub-Carboniferous formation, making the wide and beautiful Valley of the Tennessee. On one side of the valley we have the very irregular rim formed by the spurs of the Cumberland Mountains of Tennessee; and on the other, the Rac-

coon, and Sand Mountains, and the great Warrior Coal Measures of Alabama.

The greater part of the Tennessee Valley is made by the rocks of the Sub-Carboniferous formation, which are here, as elsewhere in the State, partly calcareous and partly siliceous, the former giving character to the valley as a great limestone valley. The Sub-Carboniferous in the Western States has been much more carefully studied than anywhere else, and the names given by the Western Geologists are generally adopted.

The North Alabama Sub-Carboniferous corresponds in general to Chester Group of the West in its upper parts, and to the St. Louis and Keokuk Groups in the lower parts.

In Lauderdale county, the Sub-Carboniferous beds are the following, beginning at the top :

- | | | |
|-----------|---|---|
| Sub-Carb. | { | (3). Bluish siliceous, or Silico-Calcareous rock, often weathering into a soft brownish rock. |
| | | (2). Bluish Siliceous Shale. |
| | | (1). Gray crinoidal limestone, (occasionally containing seams and patches of flint). Near Bailey's Springs it is more than 100 feet in thickness. |
| | | |

Below this is found the
Devonian { Black Shale, often including sandstones.

And below the Shale
Silurian. { (3). A sandstone, never more than 8 feet thick, (age uncertain).
 (2). Gray limestone, (Niagara).
 (1). Beds of Cincinnati or Nashville age.

The above section is from notes of Prof. Safford. All the formations below the Sub-Carboniferous are exposed only along the banks of creeks and in the ravines cut by them, in the extreme northern part of the State. They have therefore, only an extremely limited surface exposure, and need receive no further mention here.

As a *surface* formation, in parts of the Tennessee Valley are found beds of gravelly material often cemented into a conglomerate. These are referred to the Drift; but are not to be confounded with the angular fragments of chert or flint imbedded in red soil. The latter flinty masses have resulted from the disintegration of the cherty beds of the Siliceous part of the Sub-Carboniferous formation.

The soils which have resulted from the disintegration of the rock are often excellent, having a considerable portion of lime. When mixed with organic matter they are brown, as is the case with

most limestone soils. Direct evidence of the derivation of the soil from the underlying Sub-Carboniferous rocks may be seen in many places in the Valley of the Tennessee.

The principal useful mineral found in the Sub-Carboniferous formation in North Alabama is limonite or brown iron ore. This ore, here, as in similar geological position in other parts of the State is likely to be too siliceous to be profitably worked, as too much care would be necessary in assorting the ores for the furnace. I have examined beds of this ore near Mr. John Caulfield's, and elsewhere in the vicinity of Stevenson, and mention is made by Prof. Tuomey, of a bed which supplies a forge near Russellville, Lawrence county, where castings and malleable iron are manufactured. Another bed of ore of fair quality is mentioned as occurring near Newburg, in the same county.

Beds of pulverulent silex have been found in the western part of the Tennessee river. There is no material better suited than this to the manufacture of glass.

The whole Valley of the Tennessee in North Alabama, is noted for the great limestone springs, caves, &c., which characterize everywhere, Calcareous formations. The Big Spring at Huntsville, is perhaps one of the best known.

I cannot leave this part of the subject without referring to the Muscle Shoals in the Tennessee, which recent appropriations from Congress, will probably render navigable.

The advantages to this part of the State, as well as to Tennessee, of a navigable river, as the Tennessee will soon be, cannot be estimated.

The rest of our Northern Division with the exception of the Silurian anticlinal valleys before mentioned, is made up of a single formation, viz: the Coal Measures, and in giving an account of the Coal Measures, it will be best to speak of them under the following heads:

(1). Spurs of the Cumberland Mountains north of the Tennessee River. (2). Raccoon and Sand Mountain. (3). Lookout Mountain, and (4), the great Warrior Basin.

(1). *Spurs of the Cumberland Mountains.*

The great Cumberland table land of Tennessee is cut by the Tennessee River, and only the irregular edge of it is prolonged into Alabama, as spurs separated by ravines and creeks: most of these mountain spurs hold one or two seams of coal.

This part of the Coal Measures has been very little explored

in Alabama, but the following section by Prof. Safford, taken at Anderson Station, on the Nashville and Chattanooga Railroad and just within the Tennessee line will serve as a guide to the relations of the rocks of the Coal Measures throughout this region.

Prof. Safford's section is as follows :

(12).	CONGLOMERATE, coming in back of the top of the cliff formed by the sandstone below.....	
(11).	COAL and <i>Shale</i> : Coal, so far as seen only 8 to 10 inches.	40 feet.
(10).	Sandstone, heavy: makes the cliff: thickness, (estimated)	120 feet.
(9).	COAL, from 2 to 5 feet of lustrous, black, good coal, more or less laminated by thin leaves of mineral charcoal, contains some pyrites occasionally in seams. The coal will perhaps average.	3 feet.
(8).	<i>Fireclay</i>	3 feet.
(7).	<i>Shale</i>	8 feet.
(6).	<i>Sandstone</i>	10 feet.
(5).	COAL ? and <i>Shale</i>	10 feet.
(4).	<i>Sandstone and Sandy Shale</i>	55 feet.
(3).	<i>Shale</i>	1 to 6 feet.
(2).	COAL, has been opened, a laminated, cubic coal, without pyrite, will average so far as seen, from.....	2½ to 3 feet.
(1).	<i>Shale</i> , with clay iron stones, followed below by rocks not seen.	

This section resembles the lower portion of Prof. Safford's Tracy City Section, and has been referred by him to the Lower Coal Measures.

Prof. Safford says :

The second Coal below the Conglomerate (9) has been, and perhaps is now, worked at several points below Anderson. Its average thickness is considerably less than three feet. Occasionally it is above this, and at one point in Alabama, not far below the Tennessee line, it measured seven feet, soon however, running down to two.

A short distance north or northeast of Stevenson, in Jackson County, I have personally examined an outcrop of coal which is doubtless the same as (No. 9) of the above section. In the locality in question, a bed of coal about 3 feet in thickness is exposed below a cliff of sandstone near the summit of the hill. This has been worked in three or four places.

In Jackson County, four and a half miles from Boyd's Switch, on the Memphis and Charleston Railroad, midway between Huntsville and Stevenson, the Belmont mines are now worked by Messrs. DeBardeleben and others. This mine is on one of the finger-like spurs of the Cumberland mountains which come down from Tennessee.

A section by Col. J. B. Killebrew, of Nashville, of the meas-

ures in Crow Creek and Battle Creek valleys, is given, which he considers in its general features the same as that at Belmont:

Coal Measures.....	{ Cliff rock, estimated.....	70 feet.
	{ COAL seam (opened).....	4 "
	{ Fire Clay.....	4 "
	{ Shale and sandstone with probably one or more seams of Coal.....	200 "
	{ Fire Clay and Coal.....	1 to 3 "
Sub-Carboniferous..	{ Heavy bedded Sandstone.....	25 "
	{ Sandstone, concretionary.....	12 "
	{ Mountain Limestone.....	500 "
	{ St. Louis Limestone.....	100 "

Col. Killebrew says further:

But few traces remain of the conglomerate rock. It appears here to be a common sandstone, or has coalesced with the Cliff rock, (the intervening layers thinning out) under which the coal is found. It is a singular fact that a seam of coal is always found under this Cliff or Fortress rock, and is always persistent. This cliff seam is the main *Ætna* at the *Ætna* Mines, and the main seam at the Dade Mines. It is the most important bed in the Raccoon Mountains, and has been mined at various points with success and profit.

Messrs. DeBardeleben & Co. are having the property well explored with the Diamond drill.

All the detached finger-like spurs of the Cumberland Mountains in North Alabama, that are of sufficient height include coal seams, and the height of these seams above the general level of the country renders the mining a comparatively easy operation.

(2). *Raccoon and Sand Mountains.*

Above Birmingham on Sand and Raccoon Mountains, which names are applied to the high table land or plateau between the great Sequatchee fold or Brown's Valley, on the west, and Wills' Valley on the east, very little has been done in the way of exploration. This plateau extends northeastward to the Tennessee River west of Chattanooga.

On the north side of the river it continues into Tennessee under the name of Walden's Ridge. This strip lying between two great Anticlinal folds, the Sequatchee and the Wills' Valley, is a sort of shallow basin elevated especially at the two edges and having "a plateau-ridge, or back bench upon it." I can perhaps

do no better than give a section by Prof. Safford of the coal measures at the *Ætna Mines*:

Upper Measures, 220 ft.	(8.)	<i>Sandstone</i> , cap-rock of plateau-ridge, above the mines	75 feet.
	(7.)	<i>Shale</i>	48 feet.
	(6.)	COAL, " <i>Walker Coal</i> ," uniform, good, cubic.....	4 feet.
	(5.)	<i>Shale</i> , including sometimes a thin <i>coal</i> , from.....	30 to 40 feet.
	(4.)	COAL, " <i>Slate Vein</i> ," including a layer eighteen inches thick of shale and coal mixed.....	5 to 6 feet.
	(3.)	<i>Shale</i>	44 feet.
	(2.)	COAL; <i>Kelly Coal</i> , good cubical coal from	2 to 3 feet.
	(1.)	<i>Fire Clay</i> from	1 to 2 feet.
		UPPER CONGLOMERATE, simply a sandstone here..	75 feet.
	(4.)	COAL, seam a few inches	
	(3.)	<i>Shale</i>	30 to 40 feet.
	(2.)	COAL seam, ten inches	
	(1.)	<i>Sandy Shale</i> , from.....	100 to 130 feet.
		LOWER CONGLOMERATE—doubtless coalesces at some point with the Upper Conglomerate, intervening layers thinning out, from.....	70 to 100 feet.
Lower Measures, not including Lower Conglomerate, average, 288 ft.	(14.)	<i>Shale</i> sometimes wanting, from.....	0 to 12 feet.
	(13.)	COAL, <i>Main Ætna</i> or <i>Cliff Vein</i> ; the most important bed in the Raccoon Mountains; has a wide spread under the <i>Lower Conglomerate</i> or <i>Cliff Rock</i> of the Mountains; is irregular in thickness, ranging generally from 18 inches to 4 feet, or rising in a swell six, seven, or more feet in thickness; coal is of good quality, not highly bituminous, contains but little pyrite, and makes good coke; will average perhaps	3 feet.
	(12.)	<i>Fire Clay</i> , indurated, contains <i>Stigmaria</i> , often with rootlets attached; has been made into good fire-brick	1 to 3 feet.
	(11.)	<i>Shale</i> (?)	5 to 20 feet.
	(10.)	COAL, thin	$\frac{1}{2}$ to 1 foot.
	(9.)	<i>Sandstone and Sandy Shale</i>	80 to 120 feet.
	(8.)	<i>Shale</i>	0 to 5 feet.
	(7.)	COAL, of good quality, usually too thin to be mined	$\frac{1}{2}$ to 3 feet.
	(6.)	<i>Fire Clay</i>	0 to 2 feet.
	(5.)	<i>Sandy Shale or Sandstone</i>	20 to 25 feet.
	(4.)	<i>Shale</i>	15 to 20 feet.
	(3.)	COAL, lowest bed, like the last, and banks have been opened in both, from	$\frac{1}{2}$ to 3 feet.
	(2.)	<i>Fire Clay</i>	0 to 3 feet.
	(1.)	<i>Shales and Shaly Sandstone</i>	80 to 150 feet.
		MOUNTAIN LIMESTONE FORMATION.	

I give this section because it is the nearest to the northern end of the Sand or Raccoon Mountain of any section that has come under my notice. It is probable that in Alabama, the section will be found to be approximately the same. *The Cliff vein* No. 13, above, is known to be very persistent, and is accounted the most important seam in the Raccoon Mountains.

(3). *Lookout Mountain.*

Prof. Safford give a section at the *Point* of Lookout Mountain

near Chattanooga, where the coal is very poorly represented. He states however, that following the Mountain into Georgia (and Alabama), several of the coals become workable beds.

No section of the Lookout Mountain in Alabama has come under my notice, though workable beds are known to exist. Coal has been obtained from Lookout Mountain in Alabama, in several places in DeKalb county. The bed is $2\frac{1}{2}$ to 3 feet thick, and lies directly beneath the Cliff Rock. There are several mines on the Alabama Great Southern Railroad, viz: The Eureka Mines, near Sulphur Spring Station; the Haralson Mines, at Halloman's Station, below Valley Head; and Hendrick's Mine, a few miles north of Fort Payne.

Coal is also obtained in small quantities for local use in many other localities on Lookout Mountain, and also from beneath the Cliff Rock on Sand Mountain, on the opposite side of the valley.

Whilst in Alabama the Coal Measures of the Raccoon or Sand Mountain are very little known, yet the coal has been mined in an exceedingly rude manner in many places. On Short Creek, just above Guntersville, a section was made by Prof. Tuomey, as follows:

(4). Sandstone forming good roof.....	40 feet.
(3). COAL of good quality.....	$1\frac{1}{2}$ "
(2). Underclay.....	2 "
(1). Sandstone forming bed of creek.....	

This seam had been worked for the purpose of supplying the blacksmiths' forges of the vicinity.

It is not possible at present, to compare as to equivalents of the beds, this section with that of Prof. Safford's, above. It is probable that the Short Creek coal belongs to the lower division, but whether to the upper or lower part of this division, is uncertain.

(4). *The Warrior Basin.*

Under this head is described that part of the basin lying south and southwest of the South and North Alabama Railroad—the prolongation of it northeast in Sand and Raccoon Mountains has already been spoken of.

This lower part of the Warrior basin has been explored very little, except along the line of the S. and N. R. R., along the line of the Alabama Great Southern Railroad; in the vicinity of Tuscaloosa; and to some extent in Walker county; and in Fayette county, near the Sipsey river.

The greatest amount of work has been done along the S. and N. R. R., and a section of the coal fields on the line of this road,

compiled from all available authorities, will be the best introduction to the subject; after which are added sections as given by the borings with the diamond drill at Sulphur Spring Church, and Camp Branch, and finally a general section compiled from the drillings made at various points in the field along the line of the S. and N. R. R.

Description of the Measures of the Warrior Field along the line of the S. and N. R. R.

Starting from Five Mile Creek, five miles north of Birmingham, the edge of the field is touched at Boyles' Gap. Here a high ridge running northeast and southwest forms a well defined boundary.

A section through the rocks forming this ridge is as follows:

Heavy bedded siliceous sandstone, "glistening," sixty feet thick and dipping at an angle of 28° to the southeast.

Next comes a bed of limestone with Sub-Carboniferous fossils, about 75 feet thick, followed by another great bed of sandstone like the first, 120 feet in thickness and dipping about 45° to the southeast.

This bed of sandstone forms the main part of the rim of the anticlinal valley, and where cut at Boyles' gap, through which the Railroad passes, rises up on each side to a height of 125 feet. This bed of sandstone which is a good landmark all the way down the valley along the edge of the coal field, has been called by Prof. Tuomey the "Millstone Grit," which name has been retained in the Reports of the present Survey.

Following the Railroad northward, the rocks underlying the heavy bedded sandstone above described, are the usual sandstones and shales of the Coal Measures, the dip to the southeast increasing till a point is reached where a dislocation has taken place, and the strata stand at an angle of 85° . Continuing north, across the edges of the nearly perpendicular strata, a distance of about 600 feet across the strike, there are evidences of an anticlinal fold which is very abrupt, as the measures on each side stand nearly perpendicular, and even dip southeast. Crossing this anticlinal after going about 150 feet at right angles to the strike, we find a fault beyond which is the great basin of this part of the field. Immediately north of the fault the measures dip at an angle of 35° to the *northwest*, falling off to a dip of 13° in a few hundred feet.

Several seams of coal are seen in the broken and upturned strata on each side of the anticlinal mentioned above; they are

probably the lowermost seams of these measures but are too much faulted to be of much value at this point.

The railroad, after entering the basin, follows very nearly the line of the strike of the strata for about two miles, the dip being from 8°—15° northwest throughout this distance: then a fold in the rocks brings to the surface the "Warrior," "Black Creek," and "Jefferson" Seams of coal.

The openings of the Coalburg Mining Company, Thos. Sharp, Superintendent, are situated here. The slope is about 350 feet deep and is sunk upon the Black Creek seam, though some doubt seems to exist here as to which seam should bear the name of Black Creek.

The section in the vicinity of the slope would be as follows:

(11).	Shale and Sandstones.....	75 feet, 00 inches.	
(10).	COAL, (bands of Slate).....	00 " 20 "	
(9).	Slate.....	40 " 00 "	
(8).	COAL.....	00 " 12 "	} Jefferson Seam.
(7).	Slate.....	00 " 10 "	
(6).	COAL.....	00 " 12 "	
(5).	Sandstone.....	14 " 00 "	
(4).	COAL, (good).....	00 " 16 "	Unknown Seam.
(3).	Slates and Sandstones.....	35 " 00 "	
(2).	COAL.....	19 to 24 inches.	Black Creek Seam.
(1).	Sandstones, &c.		

Underneath the Black Creek seam the measures rise rapidly to about 70°, falling off to the old dip of 13°—15°.

The slope at Coalburg starts at a dip of about 35° and soon falls off to the very low one of 8°.

The Railroad continues still nearly on the strike of the strata, for three miles, to the Newcastle Station, where the mines of the Newcastle Company, Jno. T. Milner, Superintendent, are situated.

A section of the measures at this point, compiled from borings and other data, is nearly as follows, beginning above:

COAL.....	5 feet 8 inches.	Newcastle Seam.
Sandstone.....	15 " 0 "	
COAL.....	0 " 22 "	
Fire Clay.....	3 " 0 "	
Sandstone.....	20 " 0 "	
COAL.....	2 " 6 "	
Sandstone.....	25 " 0 "	
BLACKBAND IRON ORE.....	1 " 4 "	
Sandstone.....	20 " 0 "	

COAL.....	4 feet 9 inches.	
Sandstone.....	25 " 0 "	
CONGLOMERATE.....	16 " 0 "	
Sandstones.....	130 " 0 "	
COAL.....	0 " 18 "	
Sandstones.....	50 " 0 "	
COAL, [Slate in the middle]..	2 " 2 "	Jefferson Seam.
Sandstones.....	9 " 0 "	
COAL.....	1 " 6 "	
Sandstones.....	4 " 0 "	
COAL.....	0 " 9 "	
Sandstone.....	50 " 0 "	
COAL.....	2 " 4 "	Black Creek Seam.
Sandstone.....		

The Newcastle Seam may be seen outcropping on the west side of the little valley. The bed dips about 5° to northwest.

At present, work in the Newcastle Seam is suspended.

An analysis of coal from this seam, by Dr. Otto Wuth, of Pittsburgh, may be found in my Report for 1875, page 63.

When washed, this coal makes an excellent Coke; other details concerning this mine are given in the Report for 1875, page 39.

The Black Creek Seam is that one which is worked now at Newcastle. This seam is reached from the Railroad by a tramway, 1,200 feet in length. The average thickness of the seam is about 32-33 inches, and the dip like that of the Newcastle Seam, 5° to the northwest. The seam is underlaid by fire clay; the roof is also fire clay and is noted for the beautiful fern impressions contained in it.

Analysis of Black Creek Coal, by Prof. N. T. Lupton :

Specific gravity.....	1.29
Moisture.....	1.36
Volatile matter.....	31.79
Fixed Carbon.....	64.71
Ash.....	1.82
Sulphur.....	.32

The evaporating power of the coal, from experiments made in Louisville, Ky., is 8.01 lbs. of water to the pound of coal.

As a gas coal, a statement from Geo. H. Wells, of Nashville, now before me, shows a yield of 4.82 cubic feet of gas per pound of coal, and a yield of 33½ bushels of screened coke per ton. The output of this mine is 100 tons per day.

The seam of black band iron ore seen in the above section is worthy of notice. It outcrops close to the railroad, a short distance north of the station.

A quarter of a mile above Newcastle Station, there is a great fault, 800 feet or more in width, and having one east and west direction. Nothing is known of the relations of this fault to the

great field, except that it has been traced several miles from the road.

Crossing this fault, we are in the central part of the basin. The rocks here are perfectly horizontal for several miles, and no developments have been made.

At Jefferson Mines, 10 miles above Newcastle Mines, is the shaft of the Jefferson Coal Company, Marshall Morris, Superintendent. This shaft is 200 feet in depth, starting above the Conglomerate, (of the above section) and passing through the Jefferson seam and down to the Black Creek. A section of the shaft is about as follows, beginning above :

COAL, poor, full of slate.....	4 feet,	9 inches.	
Clays and sands	21 "	1 "	
CONGLOMERATE.....	16 "	0 "	
Slate	1 "	0 "	
COAL with shale.....	1 "	6 "	
Sandstones, clay and shales...	81 "	10 "	
COAL, good hard.....	1 "	6 "	
Sandstones.	40 "	6 "	
COAL, good	3 "	3 "	Jefferson Seam.
Sandstones	29 "	5 "	
COAL, good	2 "	6 "	Black Creek Seam.
Sandstones.....			

The *Jefferson Seam* in the shaft, shows a thickness of 40 inches and has a good roof.

The *Black Creek Seam* is more irregular, running from two and one-half to three and one-half feet, but has no shale partings, and is said to be at this point the best iron-making coal yet found on the road. The Eureka Company is using a considerable quantity of this coal in their furnaces.

Half a mile north of this mine, the Warrior River is crossed by the railroad, and beyond the river begins the northwest side or edge of the basin. Here the measures rise about two feet in one hundred, up to Warrior Station, 4 miles north of the river.

At this point the Warrior seam is extensively worked by Mr. Jas. T. Pierce, and the lessees of the Alabama Mining and Manufacturing Co., Mr. Frank Hoene, Superintendent.

The section at this point as given by borings, is :

Sandstones and clays, with fossils..	85 feet,	0 inches.	
COAL.....	1 "	2 "	
Sandstones, etc.....	30 "	0 "	
CANNEL COAL AND BL'CK BAND....	2 "	4 "	
COAL, average thickness.....	2 "	9 "	Warrior Seam.
Clays, sands, etc.....			

The strata under the Warrior seam are given below in the general section of the field as compiled from borings.

The seam dips very slightly, and drifts are run in all along the outcrop. The coal is an excellent one and is used by the railroad company in their engines.

Mr. Jas. T. Pierce works one shaft with capacity of 100 tons per day, and four slopes capable of an output of 150 tons per day.

The Alabama Mining and Manufacturing Company, Mr. Hoene, Superintendent, work three openings with one main entry and several east and west entries. Capacity of the mines, 120 to 150 tons daily. From the mouth of the entry the coal is hauled by steam power up an incline, and thence by a tramway one-eighth of a mile long to the weighing house: it is then dumped directly upon the cars of the S. and N. R. R., near the station.

The coal enjoys an excellent reputation, especially for domestic and steam purposes. The seam averages about 3 feet in thickness, the dip about 18 in 100 to southeast. Roof, hard slate about 4 feet thick, above which is the stratum of black band and coal, 2 feet 6 inches thick. Above the black band is sandstone. Below the coal is fireclay, 4 feet thick, the first foot gritty, the rest good clay.

The boring above given, does not show the slate between the black band and the Warrior Seam.

Going north of Pierce's Station, where the outcroppings of the Warrior seam rise to the surface, we cross a long series of sandstones and shales to Reid's Gap, where the glistening siliceous sandstone, called Millstone Grit, and the other accompanying strata are repeated, and we come then to the Valley of Blount Springs, (Brown's Valley).

The dip is slight to the southwest from Warrior to Reid's Gap, and no large seams of coal have been found on this side of the basin, as they exist on the other side—west side of Birmingham.

The great supply of coal in the future will probably be derived from the belt of country lying west and south of Birmingham and contiguous to the great deposits of iron ore along the line of the Alabama Great Southern Railway.

At a point seven miles west of Birmingham, Sulphur Spring

Church, a boring shows the section given below, the geological position of which is not yet definitely made out, though it is thought to be the upper measures. At another point ten miles west of Birmingham, at Camp Branch, another boring was made, also through upper measures it is thought, a condensed statement of which is also given. These two sections show the capabilities of the field in the immediate vicinity of the Railroads, the S. and N., and the Alabama Great Southern.

Drilling at Sulphur Spring Church, Seven Miles West of Birmingham.

Surface Soil.....	2 feet 0 inches.	
Dark Clay.....	3 "	0 "
Sandstone, gray with fossils.....	16 "	0 "
Clays.....	6 "	9 "
COAL, soft.....	0 "	3 "
Sandstone, with pyrites.....	6 "	0 "
Dark Limestone, seams of spar, &c	8 "	0 "
Clay and Sandstone.....	74 "	9 "
Bastard Limestone.....	1 "	0 "
Gray Sandstone, with coal seams and clay.....	6 "	0 "
Hard Dark Limestone.....	7 "	0 "
Sandstone and Clay (fossiliferous)	9 "	5 "
COAL, good.....	4 "	6 " Brown Seam.
Clay and Sandstone.....	22 "	3 "
COAL, good.....	1 "	4 "
Fire-clay and Clay with fossils...	9 "	6 "
Black Limestone, very hard.....	2 "	0 "
Clay, with fossils.....	17 "	3 "
COAL, and drillings of Coal.....	2 "	0 "
Clay, with Coal and fossils.....	7 "	3 "
COAL, and drillings of Coal.....	1 "	8 "
Clay fossils.....	1 "	9 "
COAL, and drillings, good.....	3 "	6 "
Clay and Sandstone, with fossils.	25 "	0 "
COAL, sulphur balls.....	1 "	4 "
Clay, with Coal Plants, Sand- stones, &c.....	66 "	2 "
COAL.....	3 "	4 " Four Foot Seam.
Clay, with Coal, Sandstones, &c., with Coal Plants.....	25 "	1 "
COAL.....	1 "	0 "
Clay, with Coal Plants, Sand- stone, &c.....	44 "	6 "
COAL, slaty and sulphury.....	0 "	10 "
Clay, with Coal Plants.....	2 "	0 "
Sandstone and Conglomerate.....	15 "	8 "
Arenaceous Clay,.....	6 "	0 "
Dark Gray Limestone.....	4 "	0 "
Dark Sandstone, with shells....	20 "	0 "
Arenaceous Clay.....	10 "	0 "
Dark Limestone, with shells.....	3 "	0 "
Clay, with seams of sand, stones, (broken).....	15 "	4 "
Dark Sandstones, fossil plants....	52 "	2 "
Hard Dark Limestone.....	4 "	0 "
Arenaceous Clay.....	30 "	5 "

Drilling at Camp Branch, Ten Miles West of Birmingham.

Surface soil and drift.....	4 feet 0 inches.
Sandstone and clay.....	14 " 4 "
COAL.....	0 " 10 "
Clay.....	0 " 6 "
COAL.....	0 " 4 "
Clay and sandstone.....	6 " 6 "
Gray fossiliferous sandstone.....	53 " 0 "
Clay and sandstone.....	26 " 0 "
Arenaceous clay, with fossil plants.....	5 " 3 "
Sandstone and clay.....	14 " 8 "
Clay with seams of coal.....	3 " 0 "
Sandstones, clays, and conglomerate (7 feet).....	229 " 1 "
COAL, hard, bright, free from sulphur.....	6 " 0 "
Fire clay 3 ft., sandstone with fossils 5 ft. 4.....	8 " 4 "
Sandstones, clays, etc., fossiliferous.....	87 " 0 "
COAL, (struck a vein of inflammable gas).....	2 " 0 "
Sandstone, slate, and clay.....	51 " 0 "
COAL, hard, black, glossy.....	4 " 0 "
Fire clay.....	2 " 0 "
Clay, sandstone, and slate fossiliferous.....	26 " 0 "

Approximate general section of the Warrior Field along the line of the S. and N. R. R., compiled from borings with diamond drill in various parts of the field.

Sandstones, upper part laminated	25 feet 0 inches.	
COAL.....	5 " 8 "	NEWCASTLE SEAM.
Sandstone.....	15 " 0 "	
COAL, poor.....	1 " 10 "	
Fire clay and sandstone.....	23 " 0 "	
COAL.....	2 " 6 "	
Sandstone.....	25 " 0 "	
BLACK BAND IRON ORE.....	1 " 0 "	
Sandstone.....	20 " 0 "	
COAL, poor, full of slate.....	4 " 9 "	
Fire clay and arenaceous clays..	20 " 1 "	
CONGLOMERATE.....	16 " 0 "	
COAL, with Shale.....	1 " 6 "	
Sandstones, Shales, and Clays..	81 " 10 "	
COAL, good, hard.....	1 " 6 "	
Sandstones.....	40 " 6 "	
COAL, good.....	3 " 3 "	JEFFERSON SEAM.
Sandstones, etc.....	29 " 5 "	
COAL, good.....	2 " 6 "	BLACK CREEK SEAM.
Sandstones, etc.....	139 " 0 "	
COAL, ? doubtful.....	1 " 6 "	
Sandstones, fossil shells.....	85 " 0 "	
COAL.....	1 " 2 "	
Sandstones, etc.....	30 " 0 "	
CANNEL COAL & BLACK BAND.	2 " 4 "	
COAL, good.....	2 " 9 "	WARRIOR SEAM.
Clays, sands, etc.....	20 " 5 "	
COAL.....	1 " 8 "	
Clay and sandstone.....	7 " 6 "	
COAL, hard, free from Sulphur..	2 " 2 "	
Shale, sandstones, etc.....	295 " 6 "	
COAL, hard and bright.....	1 " 6 "	
Sandstone and fire clay.....	17 " 0 "	
COAL.....	1 " 4 "	

Shales with coal plants.....	12	feet	0	inches.	
COAL, splendid.....	2	"	6	"	
Sandstones, clays, etc.....	102	"	7	"	
Shales and sandstones, with two thin seams of coal near bottom of series.....	450	"	0	"	
Siliceous sandstones (millstone grit).....	100	"	0	"	
Sub-Carboniferous.	Shales	80	"	0	"
	Limestone with pentremites.....	75	"	0	"
	Glistening siliceous sandstone...	60	"	0	"

We have now to speak of the mines along the Alabama Great Southern Railway south of Birmingham, of those in the vicinity of Tuscaloosa, and lastly of those in the interior of the great basin in Walker and Fayette counties.

At Clement's Station, Caldwell's Station, Coaling, and one or two other points in the same vicinity, are mines.

The coal is obtained by means of drifts, and is hauled in wagons to the railroad where the mines are not immediately upon the road.

Near Clements' Station a seam of about thirty inches is now worked by Dr. A. Clements. The coal is said to be very good.

In the same neighborhood Col. N. D. Johnson is also working a seam which shows about thirty inches of coal in two benches of equal thickness, separated by two inches of fire clay; roof of hard conglomerate rock, fifteen to twenty feet thick.

Other openings not now actively worked, are mentioned in my report for 1876.

The outcrop of coal the furthest south of any yet known in the field is near Bowen's on Lie Branch, Section 22, Township 22, Range 8 West, Tuscaloosa county.

At Ward's Shoals on the Warrior above Tuscaloosa, a bed of coal about three feet thick is exposed in the river at low water. About twenty-five feet above low water mark in same locality is the University Coal Mine, in which a seam is worked, about four feet thick, but with two or three thin bands of slate.

The seam spoken of above, as exposed in the bed of the river at low water mark, may be seen in several places lower down the river, as opposite the mouth of North River, near Finley's Mill, and it is probably the seam which is worked on the land of the Insane Hospital. No attempt at identifying these coal beds has been made, though coal has been mined in a rough way in many places near Tuscaloosa for many years.

Messrs. Spencer & Co., in Tuscaloosa, have recently commenced mining in a systematic way. They have worked two

shafts and probably have two distinct seams of coal. What they call the upper seam is above the water level in the Warrior River.

This coal is good for gas making and domestic purposes: Fixed carbon 52.16, volatile matter 43.09, ash 2.79, sulphur 1.33; but is too soft for shipment.

The lower seam which is worked on the land of the Insane Hospital, is below the bed of the river, and is much harder and in many respects superior to the coal of the upper seam.

The upper seam has a thickness of 20 to 22 inches; the lower of 24 to 30 inches.

Messrs. Spencer & Co. have shipped one large barge of their coal to Mobile. Besides supplying the railroad, they sell also in the local market. They are at present building a tramway from their mines to the railroad, and when that is finished they expect to ship large quantities by that road.

On account of the small cost of transportation of the coal down the river in barges, it is probable that this will be the great line of traffic in the future.

About twenty miles east of Tuscaloosa, examinations were made for coal a few years ago. At least two, and probably three, distinct seams of workable coal were there exposed, though the distance apart of the seams has not yet been made out. The coal from most of the outcrops has been mined for the local market for years, and the quality is known to be excellent.

In the interior of the basin in Walker county the Jagger's coal bed is said to be of great thickness, though special examinations of it have not been made.

In Fayette county near the head of Sipsey River, beds of workable thickness, yielding an excellent coal, are known. Barges loaded with this coal have been floated down to Mobile, meeting with very little obstruction.

Mr. A. C. Danner, of Mobile, speaks highly of this coal, and it is probable that a considerable trade will soon be built up between these mines and Mobile. Other localities for coal in this basin are given in Tuomey's Second Report.

In conclusion I may say that except at a few points along the South and North Alabama Railroad, the rest of the Great War-

rior Basin is practically unknown, though from reliable accounts from widely separated localities, I am convinced that future explorations will reveal in this field a wealth of coal of which we have now very little idea.

THE SOUTHERN DIVISION.

The limits of this division have already been given. It includes the Cretaceous, Tertiary, and Quaternary Formations. The two first are the sediments in an ancient sea, which have been brought up by elevation of the land.

After the Paleozoic Formations were deposited and the Appalachian elevation was made, resulting in the formation of the Atlantic mountain border of the Continent, the line passing through Fayetteville, Tuscaloosa, Centerville, Wetumpka, and Columbus, Ga., was approximately the shore line of the Continent in Alabama. It will be seen by this, that the gulf then was much larger than it is now; indeed, the mouth of the Mississippi was then near Cairo, and the lower half of Alabama, the greater part of the State of Mississippi, a large part of Arkansas and Texas, and the whole of what is now Louisiana, lay beneath the waters of the great gulf. From the disintegration of the Paleozoic continent and the washing of this material into the gulf, sediments were formed which afterwards came to be a part of the land by the further elevation of the continent. The emergence of the land and consequent receding of the shore line towards the south, were very gradual and uniform, and the remains of the marine animals, &c., inhabiting the sea during the period of deposition of these sediments, were imbedded therein, and wherever found now by the Geologist, they are invaluable as indicating the age of the deposits.

Bearing in mind what has just been said, it will be seen that these formations slope or dip away from the shore of the old continent towards the south and southwest—the dip is very gradual, about 30 feet to the mile in the older Cretaceous; and as they were added to the firm land by the slow elevation of the continent and the receding of the sea, it needs scarcely be said that the oldest of these deposits would be that first emerged, or that next to the Paleozoic shore line, and that the newer formations emerging later, are found further from this old shore line. An exception to this order is seen in the Quaternary deposits, and especially those known as the Drift. A belt of gravel sands and clays of width varying from five to thirty or forty miles, and of Quaternary age, runs across the State from east to west, cov-

ering the line of junction of the Paleozoic and the Cretaceous formations. Other superficial deposits of this character and age, overlies points of the Cretaceous and Tertiary further south: but the belt spoken of is certainly a remarkable feature.

A marked difference between this, and the other two divisions of the State, may be seen in the absence of the folds and flexures in the strata here. We find here no highly inclined beds, no folds, no faults, but only a gentle slope of 30 feet or less to the mile, away from the more ancient formations. For this reason our knowledge of the strata in any locality, in this southern division, can be gained only by examination of cuts made by running streams, excavations for railroads, and from the records of the strata penetrated in digging wells, &c.

Cretaceous Formation.

The Sub-divisions as given above, are:

Eutaw Group.....	Lower Cretaceous, (18a.)
Rotten Limestone.....	} Upper Cretaceous, (18b.)
Ripley Group.....	

The thickness of this strata is, according to the best authorities, 2,000 feet, of which 900 to 1,100 are Rotten Limestone.

The following brief characteristics of the several groups, I condense from the Reports of Prof. Tuomey, and Dr. Hilgard, of the Mississippi Survey.

EUTAW GROUP. Bluish black, or reddish laminated clays, alternating with or overlaid by, sands of gray or yellowish tint. Contains beds of lignite, silicified wood, sharks' teeth, and a few distinctively Cretaceous fossils. This lowest formation, coming as it does in contact with the belt of Quaternary age consisting also of clays and sands, is difficult to separate, in certain localities, from the latter, especially since so few fossils are preserved in it. In fact, Sir Charles Lyell considered the pebbles, &c., of the Drift, near Tuscaloosa, to be Lower Cretaceous. The distinction between the two was first made by Prof. Tuomey.

ROTTEN LIMESTONE, including the **TOMBIGBEE SAND** of Hilgard. The latter is made up of sharp, strongly micaceous sands of greenish hue, laminated when indurate, and cemented by carbonate of lime. The Rotten Limestone is a soft, chalky, white limestone of great uniformity and thickness, (1,000 feet) passing into heavy calcareous massy clays, or light colored clay marls. It is quite impervious to water and is perforated by nearly all the Artesian wells of the State—the water bearing part of the Cretaceous being the sandy strata of the lowest or Eutaw group. The

Rotten Limestone underlies the prairies, and it passes upwards into sandy strata, exhibited well at Prairie Bluff.

RIPLEY GROUP. Hard crystalline white limestones (generally somewhat sandy and often glauconitic), underlaid by black or blue micaceous marls, with beautifully preserved fossils. The Chunnennugga Ridge in East Alabama, is composed, according to Tuomey, of beds of sand, loam, clay, and limestone, abounding in well characterized Cretaceous fossils. At Eufaula, on Bear Creek, and Cowikee Creek, and other localities, the black or bluish micaceous clays, are found holding fossils which are perfectly preserved, and fresh looking.

Superficial Extent of the Cretaceous Formation.

As has already been said, this formation extends across the State from east to west, having for its northern boundary nearly the line indicated above as the limit of the Southern division; the southern limit passes near the towns of Nanafalia, Lower Peach Tree, Camden, Greenville, and Troy. The Cretaceous belt is thus about fifty miles in width.

Useful Materials.

These consist chiefly of *Marls, Limestones, and Building Stones.*

THE EUTAW GROUP, being made up of clays and sands, affords no useful material of the classes mentioned, and the same may be said of the TOMBIGBEE SAND, except that some of the sands of this group are sufficiently calcareous to serve as fertilizers.

ROTTEN LIMESTONE. This group contains some clay marls which have been used with profit; the Rotten Limestone itself is in most cases a marl, in one sense of the word. Analysis shows that it contains often nutritive ingredients such as potash and phosphoric acid, besides the calcareous part which acts mainly as a stimulant manure.

The limestone has sometimes been used for lime burning, and with success, yet the admixture of other, generally clayey, matter, renders it necessary that care should be exercised in the burning, and in many localities this admixture unfits the rock for the purpose. For building purposes the material is usually too soft, except for structures which are sheltered from the action of the weather.

RIPLEY GROUP. The marls are characterized by the presence of visible grains of *greensand* or *glauconite*, to which they owe

their higher percentage of potash, which is usually the measure of the *fertilizing* effect of a marl. The greensand and the carbonate of lime contained in these marls, constitute their value. The greensand grains can usually be detected by the eye.

Dr. Mallet gives (Tuomey's Second Report) a mean of two analyses of greensand grains from a marl from Coal Bluff on the Alabama River:

Silica.....	57.56
Alumnia.....	6.56
Protoxide Iron.....	20.13
Lime.....	1.04
Magnesia.....	1.70
Potash.....	4.88
Water.....	8.17
Iron Pyrites, trace.....	
	<hr/> 100.04

This will show the character of these marls, which, though not so rich in potash as some of the New Jersey marls, are yet valuable fertilizers. The limestones of this group are often well suited for lime-burning, and for building stones also, when they are hard and uniform in their composition.

Waters of the Cretaceous Formation.

It has already incidentally been mentioned that the lower groups, Eutaw and Tombigbee Sand, especially the former, are the water-bearing strata of the formation, and in the region made by the Rotten Limestone recourse is usually had to artesian wells which go down to the water-bearing sands of the lower group. The water from these wells is usually highly charged with salts of iron, lime, magnesia, and soda. A well of this character at Livingston, Sumpter county, has recently come into notice as particularly beneficial to those suffering from dyspepsia.

In the territory of the Ripley group, springs are abundant, and the sands of the formation are water-bearing. The formation is moreover, usually covered by the sands and gravels of the drift in which there is no lack of water-bearing strata.

Tertiary Formation.

This formation has, comparatively speaking, been very little studied in Alabama, though certain stages of it have long attracted the attention of geologists, on account of the number and beauty of the fossils preserved in them. The sub-divisions given below, are substantially those of Prof. Hilgard, of the Missis-

issippi Survey, who has, perhaps more than any other man, critically studied the strata of this formation.

SUB-DIVISIONS.

- | | |
|----------------------------|------------------|
| 1. Lignitic and Buhrstone, | } Lower Eocene. |
| 2. Claiborne,..... | |
| 3. Jackson,..... | } Middle Eocene. |
| 4. Vicksburg,..... | |
| 5. Grand Gulf,..... | } Upper Eocene. |
| | |

1. *Lignitic and Buhrstone.* The marked difference in the character of the beds of the lowest division of the Tertiary in Mississippi and of those in Alabama, cannot fail to strike the observer. In the former State, the beds are made up of lignitiferous clays and sands with remains of vegetables; and varying in color from black to brown, blue, green, yellow, gray, and almost white. With these, occur in places, small estuary deposits with marine fossils. (Hilgard). In Mississippi this division of the Tertiary is widely distributed, covering the greater part of the northern half of the State, and of considerable thickness—several hundred feet.

In Alabama, a distinctively lignitic stage cannot well be made out, the lowest Tertiary beds being predominantly marine, with alternations of lignitic strata.

Near Wood's Bluff, on the Tombigbee, a section, by Prof. Tuomey of the lowest Tertiary beds on Bashi Creek, may be taken, as a fair type:

SECTION ON BASHI CREEK.

5. Fossiliferous marl, with green sand, the upper part indurated forming a hard limestone surface rock, with numerous caves; the limestone and marl not differing in composition.....30 feet.
4. Blue Sand.....Thickness variable.
3. Lignite and clay.....6 feet.
2. Laminated clay, sand and mud.....Thickness variable.
1. Lignite.....Undetermined thickness.

Between stratum 5 of this section and the siliceous rock above it, to which the particular name of Buhrstone has been given, are about 175 feet of strata, principally laminated clays and sands with seams of lignite.

Above this comes the Buhrstone proper, a series of beds consisting of white siliceous clays with beds of silicified shells, also aluminous sandstones and claystones with fossils.

With these also are associated sandy strata containing greensand, the decomposition of which imparts to the soil a deep red tinge; where such green sand beds occur, the soil is of course very fertile.

The silicified shell beds are associated also with a conspicuous white stratum of nearly pure silica. (Tuomey).

Such is in Alabama, the general character of the lower Tertiary beds; *below* calcareous and highly fossiliferous sandy deposits, containing green sand and alternating with lignitic beds; *abovè* chiefly siliceous and aluminous strata with silicified shells, and occasionally green sand.

The country which is made by the siliceous part of the above named strata, is rugged and broken, the hills attaining, in many instances, a considerable height. The highest lands in the lower part of the State are made by these siliceous rocks. Their thickness cannot now be given with accuracy. The name *Buhrstone* was given by Prof. Tuomey to the lower Tertiary beds which include the silicified shell beds. Whether his Buhrstone includes also the subjacent calcareous and lignitic rocks is not so clear. Fossils from the lower parts of those rocks collected by myself, are many of them new to science, and a more critical study of this part of the Tertiary will be of much interest.

Prof. Hilgard is of the opinion that the lowest Lignitic Tertiary strata of Mississippi, are the strict equivalents, in time, of the lowest marine Tertiary, or Buhrstone of Alabama, since the Lignitic strata are found outcropping between two branches of the marine Tertiary, and cannot, therefore, be anterior in time.

In Alabama, as we have seen, the Lignitic feature is almost suppressed, whilst in Mississippi it is predominant in the lower Eocene and quite prominent in the Jackson and Vicksburg groups of the middle and upper Eocene, whilst west of the Mississippi it becomes more and more pronounced as we advance westward, so that all but the latest portion of the Jackson, and most of the Vicksburg sea, appears to have been an intricate maze of everglades and shallow estuaries. (Hilgard.)

2. *Claiborne Group*. This stage of the Tertiary is noted for the great abundance and variety, and the beautiful state of preservation of its fossils.

The strata of this period, as exposed at the Bluff at Claiborne, are, beginning at the top, as follows:

SECTION AT CLAIBORNE.

6. Red sand, loam, and pebbles. Drift formation.....	30 feet.
5. Mottled clay.....	8 "
4. Limestone, with green sand grains.....	54 "
3. Ferruginous sand and comminuted shells, highly fossiliferous—thickness not given.	
2. Whitish limestone.....	62 "
1. Clay, with limestone on top.....	15 "

The section is taken from Prof. Tuomey's Report.

The calcareous and sandy rocks of this group give gently undulating hills; yet, throughout the whole extent of the Tertiary of Alabama, there is a superficial covering of sand, pebbles, and loam, (Drift, &c.) which not only fills the depressions of the underlying formations, but also, often covers the hill tops: indeed, in many cases the character of the scenery is more dependent upon this superficial covering, than upon the country rocks.

Good farming lands are found upon this territory, and an abundance of excellent marls.

3. *Jackson Group*. In Prof. Tuomey's Report, this is classed together with the white limestone or Vicksburg group, though they are quite distinct.

The lower part of this group is formed of 10 to 20 feet of sandy strata of bluish tint and containing green sand grains; above this about 70 feet of soft yellowish limestone or indurated marl, containing a good deal of clay: at times, however, these strata are nothing more than a soft, yellowish, gray calcareous clay, with lignite, (Hilgard.) The clays and marls are the usual matrix of the *Zeuglodon* bones. The clays are often impregnated with gypsum. The *Zeuglodon* beds form heavy black, partly prairie soils. In Alabama they are associated, more or less, closely with the white limestone, though distinct from the latter.

4. *Vicksburg Group*. In Alabama, the white Limestone of Prof. Tuomey is here included. Besides the white or *orbitoides* limestone, the other strata of this group are laminated clays, interstratified with sand, blue limestone, white marls, and yellowish calcareous sands. The upper part of the series in Mississippi often has gypseous clays with earthy lignite, resembling, very much, similar beds in the next higher group,—which is perhaps a continuation of this.

The sandy strata hold the beautifully preserved Vicksburg fossils. The white *orbitoides* limestone, (so called from its characteristic fossil,) is well developed in Alabama, at St. Stephens, near Sugsville, Clarke County, and elsewhere.

5. *Grand Gulf Group*. This name has been applied by Hilgard to "a series of clays and sandstones, the latter generally rather aluminous and soft, and of white, gray, and yellowish gray tints; the sand being very sharp. Beds of loose sand are unusual; but the clays are often quite meagre, though the sand contained in them (as is the case in the sandstones) is usually quite fine." These beds hold large quantities of *gypsum* and *common salt*, and also of *magnesian salts*. Carbonate of lime is a rare in-

gradient, and no marine fossils have as yet been detected in these beds.

This stage of the Tertiary rarely shows itself as a surface formation, but generally only in the bluffs of streams, the whole Tertiary underlaid by it being covered with the deposits of sand, gravel, and loam of the Drift period. So far as I know, the limits and characteristics of this formation in Alabama have not been accurately made out. What has been said, applying more particularly to its occurrence in Mississippi. There is little doubt, however, that in Alabama it will be found to be made up of similar rocks to those in the adjoining State, especially since the westward extension of these beds over Louisiana has been established by Prof. Hilgard.

Useful Materials of the Tertiary.

Lignites or Brown Coal. In the lower portions especially of the Tertiary, lignite is abundant, and it has had a limited local use in forges, etc., especially when mixed with charcoal. It is not probable, however, that this fuel will come into general use for many years to come.

In the upper Tertiary, lignitic strata are of occasional occurrence, though not in so great thickness as is the case in Mississippi.

Greensands and Marls. In the Buhrstone group a ferruginous greensand has been mentioned. The analysis of this substance shows that it will be highly valuable as a manure.

In the earlier stages of the Tertiary, greensand marls abound. Near Woods' Bluff the experiment has been made of applying it to the soil. After a period of twenty years, the greater fertility of the spot so treated as compared with a neighboring field, showed sufficiently well its value.

In the Vicksburg group are both greensand marls and those in which the greensand is absent. Calcareous sands also, valuable as stimulant manure, are abundant.

In Mississippi, clay marls of the Grand Gulf age are of local occurrence, showing a large percentage of potash. Though the actual occurrence of such in this State has not been definitely established—yet there is little doubt of its existence within our limits.

Gypsum or Plaster of Paris. In the lignitic strata of the tertiary and also especially in the Jackson and Vicksburg terranes, this substance is abundant, sometimes impregnating the soil and forming the so called "gypseous prairies," sometimes in

crystallized masses and ledges of considerable thickness. Very good crystals of *selenite* or *gypsum* have been obtained from this territory both in Mississippi and in Alabama.

Limestones. The purest limestones of the formation are probably those of the Vicksburg period, (white or orbitoides limestones) which yield a lime of very good quality. Other beds of local occurrence might be mentioned, and the indurated marls of the Claiborne age would make a lime suitable for agricultural purposes. Some of them would probably give very good hydraulic limes.

Building Stones. The limestones above mentioned are, some of them, well suited for building purposes. The aluminous sandstones of the Buhrstone group make an excellent building material, easily worked and sufficiently durable.

The sandstones of the Grand Gulf period, are not fitted for building purposes, by reason of the large amounts of salts with which they are generally impregnated, which cause them to crumble on exposure to the air.

Waters of the Tertiary. Generally good drinking water is abundant throughout the territory of this formation, since the gravels and sands of the Drift form the surface material—still there is no lack of so called mineral waters. In the lower stages of the formation "Sulphur water" is not uncommon. Two of the best known Sulphur springs are perhaps Bladon and Tallahatta.

In the Claiborne and Vicksburg territory, water is abundant and generally very good, but calcareous when derived from those formations. The gravels of the Drift usually cover these rocks, and wherever the Drift is found, good water is there also.

The Jackson group is, in most cases, devoid of good water; it is hard and gypseous, and springs are scarce. On this territory, however, cisterns are used, and sometimes bored wells.

The sandstones, &c., of the Grand Gulf formation are too much impregnated with magnesian and other salts, to furnish a drinkable water: yet on this territory, also, the Drift forms the superficial covering, and affords good water.

Millstones. The siliceous rocks of the lower stages of the formation have been used in this as well as in other States, as Buhrstones. At Tallahatta Springs, these millstones have been manufactured.

Salt, has been obtained in large quantities from springs which issue from some of the lower beds of the formation. During the war, the manufacture of this indispensable article, gave em-

ployment to many men, at the salt works near Baker's Bluff, near Clarksville, etc.

Quaternary Formations.

These are in Alabama, beginning with the lowest:

1. Stratified Drift, or Orange Sand.
2. Port Hudson.
3. Loess.
4. Yellow Loam.
5. Alluvium or Recent.

1st. Stratified Drift. Orange Sand of Prof. Hilgard.

This is one of our most widely spread formations; it covers nearly all the lower half of the State and is found in many localities in the Paleozoic territory.

The materials of this formation are pebbles, sands, and clays: the pebbles and sands often cemented by iron oxide into pudding stones and ferruginous sandstones.

The pebbles are usually rounded masses of quartz, chert, sandstone, etc., varying in size from one foot in diameter, downwards.

In the main pebble beds, pebbles of the size of a hen's egg are not uncommon; while larger sizes are not as frequent.

The pebbles often show evidences of their origin. Thus around Tuscaloosa, chert pebbles of concretionary structure, and with the rhombohedral cavities caused by the dissolving out of crystals of dolomite, (showing their probable derivation from the chert of the Quebec or Knox Dolomite), are abundant. Almost equally common are chert pebbles showing casts and impressions of Sub-Carboniferous fossils. The conglomerates of the coal measures furnish also material for many of these pebbles; others of chalcedony, jasper, agate, etc., are frequently found and often in very handsome specimens. Silicified corals and other Paleozoic fossils older than the Carboniferous, are also occasionally picked up amongst the pebbles. The sands are usually rounded quartz grains, without sharp angles.

The clays are of rather local occurrence, as beds in the sands, though some of the clay deposits are of considerable extent. Most of the sands are deeply tinged, orange, red, yellow, etc., by the hydrated oxide of iron, which often cements the pebbles and sands together into a compact rock. The shapes assumed by these ferruginous sandstones are often fantastic—tubes, hollow spheres, plates, etc.; and their mode of formation is easily explained. The solution of iron filtering through the sands and pebbles, meets

with an impervious stratum of clay, and being arrested, gradually indurates, holding together the sands, etc. These hard aggregations are usually found not far from the surface, and very many of the hills of the Drift region owe their present height to a protecting cap of such hard ferruginous sandstone or conglomerate. Near the summit of any of these hills, will be found, usually, broken fragments of these rocks, reminding one often of the remains of an old forge. Brown iron ore of quality good enough to be used in production of iron, is not common in this formation, which in Tennessee and elsewhere, furnishes some ore. Generally, the ferruginous sandstones are too deficient in iron and have too much sand to be used profitably.

Stratification and Distribution.

We use the term stratified Drift in contradistinction to the Drift of the Northern States, most of which under received theories, was dropped by the melting glaciers without any stratification. Whilst the Southern Drift is stratified, it is difficult to trace any bed continuously for any great distance; the materials being stratified in the peculiar manner due to swiftly running water. Again, the Drift is not always found evenly deposited upon the older formations, the thickness, indeed, is exceedingly variable. In some instances, a thickness of more than 200 feet has been observed.

When exposed by washings of gullies, or other cause, the Drift may frequently be seen filling depressions in the older formations, which depressions—old valleys, washes, etc., were formed *before* the drift was deposited. Perhaps the same flow of water which spread these heavy beds of sands and pebbles over the State, may have been instrumental also in first denuding the surfaces upon which they were afterwards deposited.

The pebbles, in beds of varying width, seem in some instances to have followed the direction of the larger streams flowing southward into the gulf; but a belt of these pebbles crossing Alabama and Georgia from west to east, near the line of junction of the Paleozoic formations and the Cretaceous, has already been spoken of.

The sands have a much wider distribution, being found in many localities in the Paleozoic territory, and covering in general, all the newer formations of the State. They are wanting over most of the territory made by the Rotten Limestone of the Cretaceous, and also over the prairie regions of other formations, as the Jackson group of the Tertiary—and likewise in the "Flatwoods."

Fossils, Origin, and Deposition of the Drift.

Mention has been made of fossils of Paleozoic formations, also of pebbles formed of the Chert, &c., of these formations, found among the materials of the Drift. To these may be added the silicified wood occurring in many places in the Drift, and which has, without doubt, often been derived from the trunk and stems of the lignitic stages of the Tertiary, (Hilgard).

These things, together with the peculiar stratification of the beds of Drift, leave us in very little doubt as to the origin and manner of deposition of these beds. Hilgard mentions some instances in which the beds of Drift differ from the beds of the formations underlying, simply in having been removed to a very short distance and re-deposited, drift-fashion. In general, the materials of these beds are coarser towards the north and along the channels of ancient streams. All these circumstances point to the agency of swiftly running water coming from the north, and bringing down fragments, including fossils, &c., of the more ancient terranes over which it flowed. Prof. Tuomey has suggested that the meeting of these waters with the stiller waters of the Gulf, along the old shore line of the Paleozoic formation, caused a deposition of the heavier materials, such as pebbles, &c., along that shore.

That still waters, eddies, &c., intervened, may be inferred from the deposits of clay everywhere of local occurrence in the beds of sand, &c.

In many localities within the State, we have direct evidence that the original channels of some of our larger streams, were blocked up by these immense accumulations of sand and pebbles, and the waters turned aside to seek some other way to the gulf. The abrupt turns in the courses of some of our rivers, may, in this way, be explained.

Why the Drift should be absent from certain calcareous formations, and but sparingly present in others, non-calcareous,—as in the territory of the Eutaw group where it remains only as isolated knolls,—has not yet been satisfactorily explained.

Hilgard's suggestion that the uniformity in the composition of the Rotten Limestone and other prairie-forming strata, and the great toughness of the prairie clays, &c., would tend to resist denudation, and to leave comparatively smooth surfaces, upon which would be formed very few inequalities to check the flow of the waters and cause a deposition of its sediments, deserves consideration.

Still, it must be admitted that many problems concerning the Drift of the Southern States, its connection with the Northern Drift and the Drift of the Eastern shores, are still awaiting solution.

That the melting of the great glaciers of the North, furnished the enormous volumes of water which, laden with fragments of the rocks over which it passed, flowed into the gulf, principally in particular channels, in which the greater part of the coarser material was dropped, (these ancient channels being now recognized by the pebble beds or streams, which sometimes coincide with the channels of existing rivers, but which are often independent of them); that the waters were not always confined to channels, but overflowed and covered the lower half of the State, outside of these main channels, with comparatively still or gently flowing waters, which carried along and deposited sands and similar fine materials: this much seems tolerably well established.

Useful Materials.

These consist of *sands, gravels, clays, and iron ore.*

The *sands* are generally composed of *rounded* grains, and hence are not so desirable for many purposes as are sharper sands of other formations.

Gravel. Pebbles of many varieties may be found in the gravel beds of the formation. *Carnelian, jasper, agate, sard, chalcedony, &c.*, are amongst the most beautiful.

Clays. White, gray, reddish, and other varieties of clays suitable for various uses, such as the manufacture of coarse stoneware, fire-bricks, &c., occur in many localities, as subordinated beds in the sands and gravels.

Iron Ore. Brown iron ore or limonite is occasionally found in quantity sufficient to justify the working. The ferruginous sandstones and conglomerates alluded to above, have brown iron ore for their cement, and occasionally the cement or brown ore occurs with very little admixture of sand or other material.

Ore deposits of this character have been very little worked in this State.

The ferruginous sandstone, which often assumes the shapes of plates, tubes, &c., finds occasional use in the formation of rough stone work—*water pipes, &c.*

Water. Wherever this formation forms the surface, good water may always be had, though it is sometimes not very available on account of the great thickness of sand and gravel to be penetrated before it is reached.

The water of this formation is *freestone*, though by contact with the strata of other formations it may become impregnated with salts, and thus become *mineral* water.

The next three sub-divisions of the Quaternary formation, viz: the Port Hudson group, the Loess, and the Yellow Loam have not yet, in Alabama, been closely studied; their occurrence however, in this State, is similar to that in the adjoining State of Mississippi, where the whole formation has been thoroughly worked up and described by Dr. Hilgard.

2d. Port Hudson Group.

This series of strata, first described by Hilgard, overlies directly the Drift, and consists, beginning below, of Brown muck, and white or blue clays, with cypress stumps, overlaid by heavy greenish or bluish clays with calcareous concretions,—and these in turn overlaid by gravel, sand, and clays with drift wood, leaves, and mastodon bones, and yellowish sands, &c., irregularly stratified.

This is the principal part of what has been called the Pliocene or Coast Pliocene, (though not Pliocene at all,) and is confined to the lower part of the State, and to the wide bottoms of our larger rivers.

The Port Hudson clays form some of the most productive soils of the country. They are stiff clays, with calcareous concretions, crumbling upon exposure to the air, and well known in the Mississippi and Yazoo bottoms as “buckshot” soil.

3d. The Loess.

The material of this is a fine grained calcareous silt, with calcareous concretions, devoid of anything like lines of stratification. From its wide distribution along the bluffs of the Mississippi, it is sometimes called the “Bluff Formation.” Its thickness is greatest along the bluffs of the rivers, falling away inland to nothing. The only fossils found in it are the shells of snails and other land animals. Theories to explain the mode of formation of this extraordinary deposit vary considerably, the latest being that of Baron von Richthofen who has described the immense Loess deposits of China. According to this authority, the *winds* have been chiefly instrumental in moving and depositing the fine silt of which the Loess is composed. From this point of view it is not easy to explain why, with us, the Loess is confined to the immediate banks of streams.

The Mississippi has the greatest show of this deposit, it being

found on the bluffs of that river from its upper parts to the Gulf. In Alabama it has been identified by Prof. Tuomey on the Tombigbee and Alabama rivers in the lower part of their courses.

4th. Yellow Loam.

Overlying the Loess we find, wherever opportunity is afforded, a stratum of yellow loam or brick clay, which, near the larger valleys, is often as much as fifteen or twenty feet in thickness. It is altogether devoid of stratified structure, as well as of fossils, and forms the surface layer, and in most cases, the subsoil of the Gulf States, (Hilgard).

From its distribution and other characters, Dr. Hilgard regards this as an independent formation deposited after and upon the Loess. Its thickness increases towards the channels of the larger rivers, such as the Mississippi, Tombigbee, &c., showing that these streams had already impressed themselves upon the land, before the loam was deposited.

The second bottoms or hammocks of most of our streams, which are usually not subject to overflow, and into which these streams have cut their present channels, belong to a period preceding the alluvium, though comparatively modern, perhaps to what has been called the "Terrace Epoch."

5th. Alluvium or Recent Formations.

Under this head are included the river and creek bottoms, now subject to overflow, the soils, and other deposits now in process of formation.

These deposits would more properly be fully treated from an agricultural point of view, and for our present purpose a mere mention of them must suffice.

Useful Materials.

The four last mentioned groups of the Quaternary are important from an economical standpoint, mainly for the reason that they furnish some of the most fertile soils of the State, for a further discussion of which the reader is referred to the ensuing Part.

Ancient Human Relics.

"The relics of man, through which his geological history has been deciphered," are in this State chiefly—stone arrow heads, lance heads, hatchets, "chunkey," stones, sinkers, pipes, joints

of the stems of encrinites pierced so as to be strung as beads. Mounds in which have been found graven stone images, human bones, fragments of pottery, etc., mortars and pestles of stone, etc. Many of these relics, such as arrow and lance heads, are to be found in almost every ploughed field, whilst the images, and mounds are much more rare. The most remarkable series of mounds of which I have any knowledge, is to be found near Carthage, near the line between Tuscaloosa and Hale counties. From one of these mounds, several pipes of stone carved to represent the human and other animal figures, were dug about twenty-five years ago. These images were exhibited before the American Association for the Advancement of Science, where they were very greatly admired. They were considered unique by Prof. Putnam and other archæologists of that body.

In accordance with the nature of this Handbook, I have dwelt more at length upon those formations from which are derived economic materials, such as coal, iron, gold, copper, etc., still it has been my endeavor in the foregoing sketch to present a tolerably complete view of the Geology of the State, so far as our present knowledge goes.

Part Tenth.

*The Soils of Alabama.**

BY

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To the successful agriculturist, a knowledge of the chemical nature and physical characters of the soil, which he cultivates, is of paramount importance.

The soil furnishes directly to the plant, the mineral matter which is found in its ash, and is therefore most directly concerned with the nutrition of the plant. A chemical examination, alone, reveals the amount of plant-food, both available and reserved, which a soil contains—hence the value of soil analyses.

The soil is also the home of the plant; through its pores the tender rootlets penetrate in every direction, bracing the plant in its natural position and seeking the sources of the ash elements in the soil.

Again, a knowledge of the physical qualities of a soil enables us to decide *how and when to plow; how to drain*, if necessary; how to temper or economize the heat of the sun, and how, in a word, to ensure a co-operation of conditions which must conspire to produce a maximum crop.

A knowledge of all these, may not in every instance bring to the farmer the full fruition of his hopes, but it will help him to economize the fertility of his soil or overcome its barrenness, and working in accordance with natural laws, he can so modify his environments, that all the natural deficiencies and climatic vicissitudes cannot deprive him of profitable results for his labors.

Soils are simply rocks, disintegrated by natural agencies working through the lapse of ages. To the unaided eye, most soils consist of homogeneous particles, but under the microscope they are fragments of rocks more or less comminuted, identical in shape and composition with the parent rock from which they came. The size of these particles often determine the agricultural value of a soil.

* Written expressly for this HAND-BOOK.

In common parlance reference is often made to "soil" and "subsoil;" vague and indefinite terms when used scientifically, yet full of meaning to the farmer, who usually refers to the former that part of the soil which is inverted by his plow, and to the latter all beneath. Strictly speaking, the soil "is the surface stratum of earthy material as far as the roots of plants reach." In many instances on examining soils in place, we find at a depth of 2 to 15 inches, the usual range of a plow, a clearly defined line of division between the soil and sub-soil—a perceptible change in the character and color of the two; thus in effect, reaching the same definition of our terms as given by farmers. On the other hand, we often find in the bottoms, in the prairie, marshes, etc., soils which exhibit no sensible change, for often 20 feet. To these, our definition will necessarily not apply. In this paper we shall use the terms, "soil" and "sub-soil," in the sense in which they are ordinarily accepted by the farmer.

Before describing the soils of the State, an explanation of a few terms which we will necessarily be compelled to use in the course of this paper, would not be inappropriate. Most rocks are the aggregates of several minerals—some of which decompose much more rapidly than others. The first act of decomposition consists mainly in a dissociation of these mineral. After that the minerals themselves are resolved into simpler chemical combinations. Since some of these minerals decompose much more rapidly than others, we find in all soils two portions—one consisting of minerals not yet decomposed (undecomposed matter)—the other, where the minerals have already been resolved into simpler forms (decomposed matter).

It must not, however, be understood that we can easily reach that point, where the soil will consist only of decomposed matter. Such an end is not easily obtained. Nature, if left undisturbed, preserves constantly a wonderful equilibrium. While *some* of the natural agencies are at work *unlocking* the hidden treasures of the soil, others are busy in *locking* them up in new and insoluble forms.

In speaking of manures in this paper, they will all be included under two general heads, *Nutritive* and *Stimulant*. Under the former will be included only those which furnish, directly, plant food to the soil, such as "Guanos," most of the "Commercial Fertilizers," "Animal Manures," "Cotton Seed," &c. Under the latter, we shall include "Fallowing," "Green Manuring," "Lime," "Plaster," "Salt," &c., in fact all which do not furnish directly valuable plant food but simply aid nature in decomposing rock

particles and preparing them for the plant. No clearly defined line of difference can be drawn between Nutritive and Stimulant manures; since nearly all of the former are more or less stimulating, while many of the latter furnish small quantities of the less valuable kinds of plant food.

Our soils have never yet received a systematic examination and study, and hence, only such generalities can be given as may be inferred from a study of the geological formations of the State, noting under each head the kind of rocks found, and the soils resulting therefrom.

THE METAMORPHIC OR ARCHÆAN REGION.

This geological formation, after hugging the east side of the Appalachian chain of mountains throughout its entire extent, and forming some of the most valuable farming lands of the Atlantic States, enters the central eastern part of Alabama and disappears beneath the overlying drift, just below the falls of the Tallapoosa and Coosa rivers, at Tallassee and Wetumpka. It includes all, or nearly all, of the counties of Cleburne, Clay, Chambers, Coosa, Elmore, Lee, Randolph and Tallapoosa, and small parts of Chilton, Autauga, Talladega and Macon. The rocks which, by disintegration, have given the soils of this section of the State are mainly *Granites*, *Gneisses*, *Feldspars*, *Hornblendes*, *Mica Schists*, *Quartzose*, &c. In the southern and southwestern parts of this section, the soils consist often of a mixture of these disintegrated rocks and transported materials and sometimes only of the latter. However, much the greater part of this section is covered by soils which have resulted from disintegration of the above mentioned rocks "in situ."

And just here, I may remark a notable feature of these soils—a feature which cannot fail to arrest the attention of every northern geologist, viz: that decomposition of these rocks in southern latitudes have proceeded much further than the same rocks in higher latitudes, and therefore given us deeper soils. It is difficult to find in the North, a soil over a few feet deep, while here it is not uncommon to find in railroad cuts, wells, &c., disintegrated strata to the depth of 30, 50, or even 75 feet. This can be accounted for to a large extent by climatic influences. The warm waters charged with carbon dioxide, percolating, throughout the year, the easily permeable strata, acts continuously as a chemical agent in the work of disintegration, while further North, not only the amount of water, the temperature and the chemical activity are reduced, but for one-half of the year, the soil is

locked up by frost from all access of decomposing agencies,—(Kerr.) In no section of the State are presented such fine opportunities for studying the influence of rocks upon soils. Grey soils, so favorable to the growing of cotton, derived from feldspathic rocks, may be seen in many parts of Chambers and Lee, lying side by side with the warm brown mulatto soils of hornblende, which are better adapted to grain.

In studying the geology of this part of the State, we find granite giving way to gneiss and this to mica or hornblendic schist. A large area of hornblende suddenly replaced by feldspar, with now and then intervening ledges or particles of sandstone, itacolumites and quartzites. So in examining the soils we must expect to find a great variety, differing in chemical composition and in physical properties, according to the character of rocks from which they were derived, and hence the impracticability of presenting an accurate soil map or giving chemical analyses, which would fairly represent them all.

For all practical purposes we may classify these soils under four general heads, and give the nature and characteristics of each and suggest their probable wants.

1st. True Grey Soils: Such as have resulted from the disintegration of granite, gneiss, and feldspar. They disintegrate rapidly, yield easily to use of stimulative manures, well adapted to cotton, rich in potash, withstand well a drought, and do not run together or bake after heavy rains. They produce good crops of corn but are not especially adapted to small grain. Where they are very rolling and are subject to clean culture, they wash, but not to the extent of No. 2. They are easily cultivated, and since they rapidly decompose and yield well under cultivation, they are susceptible of early exhaustion, unless kept up by a system of *rational* agriculture, which returns every year as much of the fertilizing ingredient as is removed by the growing crops. The use of superphosphates alone, have, in many instances, been attended by largely increased results, showing that phosphoric acid of the ash element has been nearly exhausted. Where the soil has been, for a long time in hold crops, the addition of nitrogen in some available form with the superphosphate has proven highly remunerative, hence the good results usually attending many of the Ammoniated Superphosphates, sold in this part of the State.

Below I append an analysis of a "True Gray Soil," much worn and somewhat mixed from sand of hills—lying near a creek,

two miles north of Opelika, Lee county, Alabama, on the place of Mr. Isaac Ross :

Moisture expelled at 212° F.....	1.22
Organic matter.....	3.54
Potash.....	1.20
Soda.....	1.38
Sulphuric Acid.....	.28
Iron and Alumina.....	1.79
Lime.....	.16
Magnesia.....	.07
Phosphoric Acid.....	.043
Carbonic Acid.....	.84
Chlorine.....	.96
Insoluble matter.....	88.320
	<hr/>
	99.803

It is evident from an examination of analysis of this soil, that vegetable matter, Phosphoric Acid and Lime, are mostly needed. Green manuring with superphosphates would meet its wants in the cheapest manner. A compost of cotton seed, stable manure, and superphosphates has been found to produce most efficacious results.

2d. Red, Brown, or Mulatto Soils: These have resulted from Hornblende rocks, and since they contain much iron, the soils are naturally red, becoming brown or mulatto when mixed with *humus*. These soils cover the greater part of this region, and were never intended for cotton—their composition, together with the configuration of surface, forbidding clean culture. All over the world they are pronounced as the best grain lands, and here nothing but the difficulties of transportation and the consequent low prices, have heretofore prevented a large portion of this section from being the rival of Ohio in the raising of wheat and oats. This difficulty has been partially removed, but most too late for the benefit of the present generation. The continuous cultivation of cotton has greatly deteriorated the surface soils. The country is everywhere hilly and undulating, and the greatest care must be practised in cultivation, to prevent washes, even when the soils are kept filled with vegetable matter. Mr. Jefferson, whose home, at Monticello, was situated in the same formation, early in life, learned from the French peasants, the expediency of hillside ditches, and horizontal rows, and adopted them upon his own place, even though his favorite crops were grain. But no such practice has obtained in Alabama; for forty years or more cotton, relieved only occasionally by a crop of corn, has been persistently grown—vegetable matter, a preventive to some extent against denudation, has been utterly eradicated by the clean culture which cotton requires; hillside ditches, if any existed, were of a primitive char-

acter, such as were laid off by the eye of a man on horseback, and often productive of serious injury. Deep plowing, so essential in a physical and chemical sense, was ignored. The rains came, the floods descended, and the fine soils which nature had been ages in forming for the use of man, were suddenly transported to the Gulf of Mexico, and red, barren, bleak, unsightly hillsides were left, to irritate the improvident farmer and elicit unfavorable comments upon his system of farming from the accidental traveller. The recovery of such hillsides, though slow, is yet possible. Leveling as far as possible, hillside ditches, deep plowing, aiding the soil at first with nutritive manures, afterwards with stimulants, incorporating vegetable matter, with frequent fallowing, and the primitive fertility will assuredly be regained. I do not say that such recovery at the present time is feasible. I only say it is possible, and the plan is given for those who may wish to reclaim small but eligible spots.

But much of the original soil remains and is giving handsome returns to well directed labor. The *first* need of these red soils, is *vegetable matter*; *humus*, to aid in preventing washes—to withstand excessive droughts, to prevent the baking and packing of wet, and the cracking and rifting of dry weather. *Deep Plowing*, which is to be recommended on almost all soils, is here *trebly* required, to give larger extent of surface to the growing plant—to increase the capacity of the soil to absorb rapidly large amounts of water, and enable the plant to withstand droughts.

These soils are similar in their origin and composition to those of Albemarle, Virginia; and if we were to imitate these good farmers of the Old Dominion in the preservation of the soil, the preparation and cultivation of small grain and grasses, a free use of manures and improved implements, and a liberal raising of stock, there is abundant reason for believing that we would far excel this wealthy and highly favored portion of Virginia, both in the products of the land and interest upon our investments.

I append an analysis of a red soil with an intense red sub-soil obtained on the same plantation as No. 1:

Water expelled at 212° F.....	9.46
Organic Matter.....	6.34
Iron Oxide and Alumina.....	6.75
Soluble Silica.....	.316
Potash.....	.135
Soda.....	.154
Lime.....	.96
Magnesia.....	.15
Sulphuric Acid.....	.241
Phosphoric Acid.....	.025
Carbonic Acid.....	.77
Chlorine.....	.355
Manganese.....	.23
Insoluble Matter.....	74.54

100.426

This soil was taken from a field which was comparatively level and had not been washed. It had been in constant cultivation for over 40 years, with perhaps little or no manure during all that time. From the analysis, we see that even yet it is a fair soil and its greatest need is phosphoric acid. The subsoil is much richer in the fertilizing ingredients than the soil, hence deep plowing, incorporating the two, will prove highly beneficial. Lime is always abundant in hornblende soils, and potash is rarely wanting. In this instance, constant cropping had reduced the latter in the surface soil considerably below the average.

3d. Light Grey or Isinglass Soils: Such as have resulted from the disintegration of mica or micaceous rocks. They are similar to the true grey soils in appearance, except they contain more sand and more mica. They are not so fertile as No. 1, but much more lasting—mica which furnishes the plant food, decomposing slowly under the influence only of natural agencies. They produce fair crops of corn and cotton, but are not well adapted to small grain. They possess similar physical properties though to a less degree, as No. 1, but are generally greatly inferior in chemical composition. I have no analysis of a fair average of Isinglass Soils—have made several of this class of soils—but they were all mixed with much sand.

No. 4. Sandy Soils: Such as have resulted from Sandstones, Quartzites, and Itacolumites. These vary in value according to fineness of division and to admixture of transported material. Some are obdurately barren, whilst others, under proper management, yield good crops.

It is easily cultivated. Cotton never grows large, but is usually well fruited. Potatoes and most root crops succeed well. I have seen fine orchards of peaches and apples also on these soils. Improvement can be readily obtained by turning in of green crops and the free use, afterwards, of Nutritive manures. Wherever the soil is immediately underlaid by a stratum of clay or loam, such improvement may be made permanent, otherwise it has to be periodically renewed. Much of these lands are used for spring and summer pastures, the early sedge, after burning off the growth of the previous year, affording a pretty good quality of nutritious grazing. These soils vary so much in composition that no analysis could represent them all, hence I deem it useless to insert any here, though several have been made from different parts of this section.

General Remarks upon the Archæan Region.

This portion of the State is considerably elevated above the level of the sea, in many instances rising to the height of 800 feet. Water is excellent, (freestone) and may be obtained, either from springs, (which are common) or from wells. The latter are rarely deep and generally require no curbing. The health of the country is excellent, No malaria exists. The country is well settled, and its lands, though all occupied, are, much of them, uncultivated.

This section seems to be well suited to peaches, producing the largest and most exquisitely flavored ones to be found anywhere. Grapes, too, are grown with great success. Wild plums and blackberries are everywhere to be found in great profusion. There are many reasons for believing that this country was designed by nature for stock raising. It is everywhere well watered, and the native grasses, beginning in early spring, with the Buffalo Clover, followed by the Bermuda and Crab grasses in the summer and fall, and the Cane in winter, furnish abundance of sustenance for horses and cattle throughout the year. Limited experiments have been made in this direction with good success. Interspersed between the hills are many fertile valleys and hammocks formed of transported material brought down from adjacent hills and partaking, more or less, of the character of the hills. They are usually very productive and are much esteemed as farming lands. Many of these bottoms, if left uncultivated and protected during the summer from stock, afford large quantities of cane, upon which cattle and horses can be kept the entire winter.

THE SILURIAN AND DEVONIAN REGION.

In this state it would be well for our purpose to include under one head these two geological periods, since the latter is represented only by small outcrops ("black shale") closely associated with silurian rocks. The formation included under above head occupy small but valuable areas. Besides small and scattered patches in North Alabama, it enters Northeastern Alabama and following the bend of the Appalachian Mountains extends as far south as Centreville, in Bibb county, making the Coosa Valley and its outliers, Cahaba, Roup's, Wills', Murphree's, and a part of Brown's. If we except the eastern mountain border of the Coosa Valley which is composed of Acadian slates and conglomerates (a broken rugged country, arable only in creek bottoms, but hills covered with grasses and leguminous plants, affording

good pastures) and an occasional outcrop of sub-carboniferous chert, the entire structure of these valleys is of this formation. The counties occupied in part by this formation are Bibb, Blount, Calhoun, Cherokee, DeKalb, Etowah, Jefferson, Marshall, Shelby and Talladega.

The epochs of this formation represented in Alabama are :

Potsdam Sandstone: A mountain-making epoch of comparatively limited extent, sparsely settled, very little cultivated, but valuable pasture grounds. Occasionally furnishing some fine farming lands, styled *red clay*, though in reality sand colored by iron, well adapted to grain and grasses, at present wanting in vegetable matter, but susceptible of great improvement. Below are analyses of soil and subsoil taken from Section 10, Township 20, Range 3, near Childersburg, Talladega county, Alabama: No. 1 is soil; No. 2. sub-soil :

	No. 1.	No. 2.
Soluble Silica.....	.063	.116
Tannic (?) Oxide.....	2.715	6.060
Alumina.....	1.515	1.600
Manganese.....	.570	.665
Sulphuric Acid.....	.275	.384
Potash.....	.434	.467
Phosphoric Acid.....	.075	.090
Carb. of Lime.....	.265	.294
Carb. of Magnesia.....	.216	.240
Organic Matter.....	5.700	1.740
Insoluble, Soda and Chlorine.....	88.172	88.324
	<hr/> 100.	<hr/> 100.

An inspection of the above analyses will show at once that Phosphoric Acid is the only element really needed. This too is not abundant in sub-soil. Green manuring with stimulating manures would do a great deal towards making this soil very productive. The addition occasionally of a heavy dressing of superphosphate or ground bone would largely increase the yield of crops.

Calciferous: Another mountain making epoch, with long, narrow, sharp ridges—little cultivated—not valuable for pasture, but with a varied and valuable timber growth.

Quebec: Divided in Alabama, into Knox Shale and Knox Dolomite, after the geology of Tennessee. Many of the valleys in which are found some of the best farms in the State, are composed of this shale. The soils vary in fertility according as the shale approaches the surface, and are easily tilled—but owing to an improvident and irrational system of cultivation, which has for years made such continuous drains upon them, with no compen-

sating returns, many of these rich farms have been partially exhausted, abandoned and allowed to grow up in old field pines.

The Dolomite, of wide superficial distribution, the most massive calcareous formation in the State, gives characteristic soils—which cover, perhaps, three-fourths of the valleys mentioned above. The physical features of wide valleys, with subordinated ridges of chert, at once characterize and determine this epoch. The lower part of the epoch is calcareous, the upper cherty, hence upon the former are found most excellent farming lands, with deep, rich soils, colored intensely red by iron present. The fine red soils of Bibb, Shelby, Talladega, Calhoun, and Cherokee counties, which have been cultivated since the early settlement of the country, and which still bear good crops, attest the true value of these lands. The upper cherty portions of this formation, when confined to ridges, sometimes give good soils, but when the chert is the prevailing rock, as in Talladega county, southwest of Talladega town, between the mountains and the river, we have a hilly, unproductive, sparsely settled country, cultivated only along creek bottoms, with a fine growth of long leaf pine and an undergrowth of leguminous plants and grasses, upon which a large number of cattle find subsistence. Between these two extremes we find all intermediate grades of soil—but none of them are really sterile.

Chazy and Trenton: These two formations, closely associated with the Dolomite, are of limited area and confined to narrow glades which grow red cedar in great abundance. These soils are of the highest order, but so limited in extent as to be of no agricultural importance in Alabama. The famous blue grass regions of Kentucky and Tennessee are upon soils derived mainly from these formations.

The Clinton or Red Mountain: The Black Shale and the Cherty Sub-Carboniferous make up the remaining formations of these valleys. The first yields the red hematite, the fossiliferous iron ore, so valuable in the iron economy of Alabama. They all form rugged, flinty, ridges, little cultivated, but affording good pasturage.

General Remarks on the Silurian and Devonian Region.

The above formations make up the valleys named. From a close inspection of the geological epochs, we find they are often crowded together—sometimes several are found on the same farm, and since these epochs, vary in kind of rocks furnished, limestones, sandstones and shales, we are surprised to find every

kind of soil represented, from the richest bottom to the unproductive hill-top. We can, therefore, give no formula or suggest no want which would be applicable alike to them all. A thorough chemical examination of these soils, aided by direct experiments in the fields upon crops of known composition, would be of great benefit in determining their needs and wants, and materially aid the farmer in securing that improvement now so "devoutly wished." But I cannot refrain from expressing the opinion that nature has intended most of these lands for grains and grasses, that instead of the numerous cotton bales which are annually sent to market, large droves of fat cattle and sheep, should bear to the shambles, the concentrated products of the soil. They are finely watered and bear well the "trampling of the hoof." Clover, to a limited extent, has been very successfully grown. Here, too, deep plowing, to bring up and mingle with the soil the more fertile subsoil, followed by green manuring with small quantities of nutritive manures, will, in many instances, give us soils not inferior to the blue grass regions of Kentucky.

THE SUB-CARBONIFEROUS REGION OF NORTH ALABAMA.

This forms one of the two great agricultural regions of the State. The counties occupied wholly or in part by this formation are Limestone, Lauderdale, Madison, Jackson, Colbert, Lawrence, Morgan, Marshall, Franklin and Blount. The Tennessee river, rising between the Cumberland and Alleghany Mountains, enters Alabama along an anticlinal valley until it reaches Gunter's Landing, where it is turned westward by the shales and millstone grit of the coal measures, and then flowing for over 200 miles in this direction, it breaks through the yielding cretaceous rocks of Tennessee, and performs that anomalous hydrographic feature of flowing north, till finally it mingles with the "Father of Waters." The valley from Gunter's Landing is one of denudation, one in which the carboniferous rocks extending once from Walker county to the Tennessee line, have been worn away by the erosive power of water, so that now only Montesano and its outliers, with their tops crowned with the unyielding millstone grit, remain to confirm this geological fact. The waters damned up in this inland sea, in obedience to a well-known law of Physics, "a body in motion will follow the line of least resistance," cut their way through the yielding cretaceous rocks of Tennessee rather than attempt to reach the Gulf by a direct route. This magnificent valley extends from Gunter's Landing to the Mississippi line and is of varying breadth.

Its rocks from the top of Montesano to the foot of Muscle Shoals, are about 1,500 feet in thickness, and consist of limestone more or less siliceous, and sandstones. The soils so far as I have been able to examine are of great uniformity—mainly the disintegration of a porous fine-grained sandstone containing more or less limestone and filled with fossils and cherty nodules. Occasionally the sandstone has been denuded and patches of limestone are found in the depressions, scooped out by the streams; still the prevailing rock is sandstone.

This sandstone contains much iron and in weathering gives soils of an intense red color, impressing most of the farmers with the idea that they are cultivating clay soils. But such happily is not a fact. Since they are sand, the heavy rains falling upon these level porous lands, are soaked up at once and re-appear in those magnificent fountains such as are found at Huntsville and Tusculumbia. The native growth of this country consists of enormous oaks upon the red lands, giving way to red cedars when the limestone approaches the surface. When first settled, these lands were magnificent and commanded enormous prices. Though they have been in continuous cultivation for nearly fifty years, and that, too, without any manure, save such as has been necessarily saved on a farm, they still bring remunerative crops when well tilled. These soils, when mixed with vegetable matter, become brown and the appearance of red hills is but a declaration that the upper soil is gone. They are excellent for grains and grasses. The writer has seen as fine crops of blue grass, clover and orchard grass, grow upon these unmanured soils as he has ever seen in the most famous grass regions of this country. Cotton, too, grows well and makes fine weed, but from perhaps lack of phosphoric acid in the soil and rather too short season, does not fruit well. Fruits of all kinds are grown here, but it seems to be the special *habitat* of the grape, which grows here to as great perfection as upon the banks of the Rhine. No part of the State is so desirable for a home, affording so many advantages and possessing such magnificent agricultural possibilities. It is, and has been, the home of an intelligent population; divided into large farms with fine residences and excellent improvements. In the near future, when fertilizers shall be extensively used and a proper system of rotation adopted, and a diversified farming shall supplant the now exclusive cotton culture, a new era will dawn upon this highly favored country and its waste places shall again bloom with the emerald tints of restored fertility. Upon most of these soils superphosphates are wanted to supply the

much needed phosphoric acid, which the continuous cropping in cotton, and in many instances, the ruinous practice of selling the seed beyond the limits of the farm, has removed. The worn places can be renovated by fallowing, pulverizing, and applying both ammonia and phosphoric acid in some available form. A compost of cotton seed, stable manure, and superphosphate, to be used on these spots is to be highly recommended. Deep plowing, intermixing the more fertile subsoil with the soil, seems also desirable. There is at present one serious drawback to this beautiful portion of the State—the want of a near market for its produce. Cotton is now the only product which will stand transportation to the distant markets of Nashville and Memphis, but we cannot think this will always be so. When the railroad system, now projected through the heart of our mineral wealth, shall be developed; when the canal around Muscle Shoals, now being constructed, shall be completed; when our iron and coal industries shall attain the powerful proportions to which they are destined; when this valley shall smile again with its restored fertility, then will commerce and manufactures seek an emporium of trade and build a city of one hundred thousand inhabitants somewhere on the banks of the lovely Tennessee, and exchange their goods and wares for the teeming products of this favored land. It is no idle speculation or dreamy imagining which gives birth to this prophecy, but a calm survey of the surrounding potentialities. We verily believe all this will be fully realized in the next 50 years.

THE CARBONIFEROUS REGION, OR COAL MEASURES.

The 5,000 or more square miles of coal measures in this State, are, in an agricultural view, nearly worthless. Nothing less than a large quantity of nutritive manures and pure Teutonic pluck can ever make them yield profitable results. The counties occupied wholly or in part by this formation, are Blount, DeKalb, Etowa, Franklin, Fayette, Lawrence, Marshall, Morgan, Jefferson, Jackson, St. Clair, Shelby, Walker, Tuscaloosa, and Winston. The soils mainly sandy and loamy, resulting from the partial disintegration of sandstones and shales, are easily tilled, hard to improve, and easily washed. Only in the creek bottoms and depressions can cultivation be made remunerative.

However, upon some of the uplands, orchards and vineyards are found of unusual productiveness. Much of this formation consists of level table lands with a stunted, scanty growth, and an undergrowth of sufficient nutrition to support large quantities

of cattle and sheep. Deer and other varieties of game are abundant in many places. The country is inhabited only by small landholders, and they are "few and far between." The water is excellent and abundant. But though its bosom is bare, its womb is fertile and is constantly pouring into the lap of commerce, quantities of bituminous coal, the residue of a luxuriant vegetation which once flourished upon its bosom. When we know this we are not surprised now at its infertility. In the divine economy, it seems decreed that the materials which have sustained and preserved such a vigorous vegetation in the past, shall not become fit to serve as soils for plants of the present age. These shales and sandstones gave up their valuable chemical properties in supporting this vigorous vegetation, and underwent essential physical changes in the effort, through a long lapse of ages, to preserve it. They are now dense, compact, and semi-indurate—they are wanting in those ash elements which are so essential to the growth of plants. Hence, before they can be made suitable for the growth of analagous plants, at present existing, they must undergo, through another lapse of ages, the disintegrating influences of atmospheric agencies, and have mixed with them the ashes of the untold millions of tons of coal which lie buried beneath them.

THE CRETACEOUS PERIOD.

Prof. Tuomey, in his Geological report, divided this period into the "Lower," "Middle," and "Upper." Dr. Hilgard, of Mississippi, again divided the "Middle" into 2 groups—thus making four groups, and assigned to them the names of "Eutaw," "Tombigbee Sand," "Rotten Limestone," and "Ripley." In this paper we shall adopt Hilgard's nomenclature.

While the geology of this country has been well studied and understood, from a strictly scientific standpoint its relation to agriculture has not yet been fully examined, nor can it be without great cost and labor—for while recognizing the underlying rocks which often reach the surface, we frequently find them covered with transported materials of later periods, and sometimes intimately mixed, thus giving rise to an almost unlimited number of soils, both in appearance and productive capacity. This belt enters Alabama at or below Columbus, Georgia, and running across the State with an average width of about 60 miles, passes through northeast Mississippi into Tennessee. In Alabama, we find this formation best developed, occupying wholly or in part the counties of Butler, Bullock, Barbour, Crenshaw, Autauga,

Dallas, Elmore, Fayette, Greene, Hale, Lamar, Marion, Marengo, Montgomery, Lowndes, Macon, Perry, Pickens, Pike, Russell, Sumter, and Wilcox.

Eutaw Group: Consists of sand, more or less clayey, with a yellow color. Soils are inferior but susceptible of improvement. Region occupied by them hilly and sandy. Springs abundant, and water nearly always pure freestone. The whole territory has been once covered with the drift which now remains only upon isolated ridges and hills, marked features of this epoch. Wherever the drift forms the entire soil, pines occur, and lands are poor, but when underlaid by a good subsoil of clay, within reach of the plow, improvement is easy.

Tombigbee Sand Group: The soils are sandy, approaching, in character, those of Eutaw, save they are more calcareous, and the valleys are narrow and fertile. The prevailing growth, *short leaf pine*, post oak, black jack and chestnut remains unchanged.

Rotten Limestone: This is the great prairie forming stratum of the cretaceous. The country underlaid by this formation is called the "cotton belt," a belt so widely known that Marengo county once had a national reputation. Here we find a great variety of soils, and locally, many names for them, but the "Prairie Region" proper, consists of white clay marls or soft limestone, (Rotten Limestone) and forms a level or gently undulating surface, mostly with heavy calcareous soils, partly prairie, and partly oak uplands, poor in springs and with limy well waters—(Hilgard).

These belts or series of disconnected patches of prairies proper are found scattered among areas of a more rolling nature, pale light soil covered with common upland oaks. Sometimes these oak prairies are very fertile, but often found poor, as may be inferred from the stunted growth upon them, the fertility seems to be determined by the depth of the rotten limestone beneath them. Where these uplands slope off to the creek bottoms, "Hammocks" are found, increasing in fertility as they descend—till finally, in the bottoms, they differ only from true black prairie, in being lighter and containing more vegetable matter. The black prairie is a heavy, dark, clay soil with a pale, greenish yellow subsoil, underlaid at a depth of 3 to 10 feet by rotten limestone. When this *subsoil*, at the edges of the black prairie, approaches the surface and becomes the soil, it forms what is usually termed "Black Jack Prairie," and where the rotten limestone approaches the surface and mixes with the soil, it

is termed "Bald Prairie." Wherever the latter occurs, clumps of Crab Apple, Wild Plum, Honey Locust, &c., are usually to be seen, and as this bald prairie gives way to prairie proper, so these trees are replaced by Oaks. These soils seem by nature decreed for corn and cotton. It is pre-eminently the "Cotton Belt," and I would advise no system of agriculture which did not include cotton as the chief crop on these soils. Without a more careful examination and study of these soils, it would, of course, be premature for me to lay down any regular rules to be followed in the cultivation of them—but from data obtained from examination and analyses of soils taken from Lowndes county, a few suggestive hints might be given. They are very heavy soils, and in wet weather are exceedingly troublesome to cultivate. Everyone knows how hard it is to obtain a "stand" in a wet spring. Still they are unlike other heavy soils. In drying after a heavy rain, instead of breaking up into clods, they crumble into an impalpable powder, giving the appearance, when dry, of a very light soil. This property is due to the lime present and is common to all calcareous clays. With this self imposed correction, proper drainage is alone necessary to insure the crops against the vicissitudes of the weather. It is needless here to give the benefits of draining. Suffice to say, that no country stands more in need of it than this, since none suffer so much by being plowed, or trampled by cattle in wet weather. Drainage and deep plowing will therefore greatly aid in remedying the physical properties of these soils and thus enable the crops to send their roots deeper and over a wider range in quest of food. Add to these the proper nutritive manures—(superphosphates particularly, furnishing both Phosphoric and Sulphuric Acids, of which some of these soils, from analyses, stand in need,) and the primitive fertility of these lands can be regained and maintained. On the bald prairies, vegetable matter is greatly needed and they should be treated as though they had received an overdose of lime. Again on some of these Oak Uplands, by continuous cropping, the lime appears to be nearly exhausted. A good application of marl or an admixture of the bald prairie would prove of great benefit. There is one objection to this country—the want of water. The streams flooded at every good rain, soon go dry. No springs exist, and water has to be caught in cisterns under ground without cement, in the impervious limestone, for man and beast, or else obtained from artesian wells, bored into the under-

lying strata of Eutaw and Tombigbee sand. Below I append some analyses made of soils from Lowndes county, Alabama:

No. 1, called Prairie Proper or

BALD PRAIRIE;

black; hard calcareous soil; rusts cotton:

Moisture (expelled at 212°).....	16.93
Organic Matter.....	8.5
Soluble Silica.....	.124
Iron Oxides and Alumina.....	1.55
Carbonate of Lime.....	12.89
Carbonate of Magnesia.....	.1438
Sulphuric Acid.....	Trace.
Potash.....	.482
Soda.....	1.73
Phosphoric Acid.....	.1279
Insoluble.....	57.1243
Chlorine, Manganese, and loss.....	.398

100.

The absolute weight of a cubic foot is 77.88 lbs. Sample obtained near Letohatchee.

No. 2 is an analysis of

BALD PRAIRIE SUBSOIL,

which rusts cotton:

Moisture (expelled at 212°).....	16.53
Organic Matter.....	4.61
Soluble Silica.....	.413
Iron Oxides and Alumina.....	2.3
Potash.....	1.485
Soda.....	2.234
Carbonate of Lime.....	.35
Carbonate of Magnesia.....	.063
Sulphuric Acid.....	Trace
Phosphoric Acid.....	Trace.
Insoluble.....	37.8
Chlorine, Manganese, and loss.....	.178

100.

One cubic foot weighs 80.69 lbs; natural color grey. Sample obtained from plantation of Mr. Satterwhite, of Letohatchee.

No. 3 is an analysis of

POST-OAK PRAIRIE SOIL.

Moisture and Organic Matter.....	13.
Soluble Silica.....	.091
Iron Oxides and Alumina.....	.9
Carbonate of Lime.....	.35
Carbonate of Magnesia.....	.0945
Potash.....	.213
Soda.....	.464
Phosphoric Acid.....	.08
Sulphuric Acid.....	.0858
Insoluble.....	84.5117
Chlorine, Manganese, and loss.....	.21

100.

Absolute weight of cubic foot 83.84 lbs; color dark. Obtained from plantation of Dr. Hopping, of Letohatchee.

No. 4 is an analysis of

POST-OAK PRAIRIE SUBSOIL.

Moisture and Organic Matter.....	23.
Iron Oxides and Alumina.....	6.43
Sulphuric Acid.....	1.23
Carbonate of Lime.....	.48
Carbonate of Magnesia.....	.684
Potash.....	.289
Soda.....	.533
Phosphoric Acid.....	.113
Other substances, and loss.....	.709
Insoluble.....	66.532
	<hr/>
	100.

Absolute weight of cubic foot 76.12 lbs; color red. Sample obtained from farm of Dr. Hopping, of Letohatchee.

No. 5 is an analysis of

WOODLAND PRAIRIE SOIL.

Moisture and Organic Matter.....	9.05
Soluble Silica.....	.087
Iron Oxides and Alumina.....	3.20
Carbonate of Lime.....	.42
Carbonate of Magnesia.....	.0588
Potash.....	.1534
Soda.....	.4632
Phosphoric Acid.....	.0384
Sulphuric Acid.....	.031
Insoluble.....	86.2453
Chlorine, Manganese, and loss.....	.2529
	<hr/>
	100.

Absolute weight of cubic foot 70.12 lbs; color dark. Obtained from woods at Letohatchee.

No. 6 is an analysis of

WOODLAND PRAIRIE SOIL.

Moisture and Organic Matter.....	14.50
Iron Oxides and Alumina.....	3.70
Sulphuric Acid.....	.006
Soluble Silica.....	.134
Carbonate of Lime.....	1.76
Carbonate of Magnesia.....	.504
Potash.....	.496
Soda.....	.634
Phosphoric Acid.....	.262
Other substances, and loss.....	.350
Insoluble.....	77.654
	<hr/>
	100.

Absolute weight of cubic foot 72.25lbs; color black. Sample obtained from farm of Mr. Branscomb, of Gilmer's. It rusts cotton.

Ripley Group: This is characterized by limestones more or less sandy, and glauconitic, underlaid by micaceous clays, (more

or less sandy) interstratified with an occasional ledge of limestone. The soils when not overlaid with drift or yellow loam, are good, the green sand present ensuring permanent fertility under proper treatment. Hills and ridges are prominent features in the landscape, often covered with thick strata of drift, e. g. Chunenugger, Bullock county, Alabama. Small prairie spots are met with, often on tops of ridges where soft calcareous rocks come to surface, forming what are known as "bald prairie hill-tops." These overlying beds of sand, etc., afford generally an abundance of water, a great desideratum in the prairies. The streams which empty into the Chattahoochee have their beds in this micaceous clay, and it is believed by the writer (who has not, however, personally examined them) that much of the fine farming lands of Russel, Barbour, Bullock and Macon are of this formation.

General Remarks on the Cretaceous Region: This belt, which constitutes, with the valley of the Tennessee, the two great agricultural formations of the State, is remarkable for many characteristics, not possessed generally by soils. Geologically speaking, it has no counterpart east of the Mississippi river, and for breadth of surface, fertility of soil, and ease of culture, has no equal on the continent. It is admirably adapted to corn and cotton, and notwithstanding the continuous cultivation for over fifty years, it still bears handsome crops. These lands formerly commanded high prices, but since the war these prices have not been maintained.

The health, when proper sanitary regulations were exercised, was good. Since the war, little or no attention has been paid to sanitary observances, and hence malaria, to some extent, has prevailed. But a removal of decaying matter from the streams, with proper ditching and drainage, would greatly benefit the country, in a hygienic sense, and make it as healthy as rich lands generally are.

THE TERTIARY SOILS.

We have constantly alluded, under the cretaceous formations, to the presence of *Drift and Yellow Loam*, as forming much of the surface stratum, and therefore the soils. In the southern part of the State we find this to exist to a very great extent, often covering large areas, to the depth of many feet. Even when the true tertiary strata approach near, or quite, to the surface, the soils formed therefrom are greatly modified by an admixture with drift.

Geologically, this age is represented in Alabama by five groups: The Lignitic; the Claiborne; the Jackson; the Vicksburg, and the Grand Gulf. The counties occupied wholly or in part by this formation are—Barbour, Baldwin, Butler, Clark, Choctaw, Coffee, Covington, Connecuh, Crenshaw, Dale, Escambia, Geneva, Henry, Mobile, Monroe, Marengo, Pike, Sumter, Washington, and Wilcox.

The Lignitic territory is generally hilly, except small portions bordering upon cretaceous formations, where the true lignitic clays or sandstones approach the surface and form tolerably good soils. The hills are generally covered with the drift and are poor, while the bottoms and creek sides immediately beneath them, where the greensand marls of this period come to the surface, are very fertile.

The Claiborne: The area underlaid by this division is small and possesses no striking peculiarities in surface formations. It outcrops upon the banks of streams and creeks, and imparts to the soils of the valleys considerable fertility. So far as the writer is aware of, it forms no large tracts of desirable soils outside of bottoms and valleys.

The Jackson and Vicksburg groups are both strongly calcareous and present many points of similarity to the rotten limestone of the cretaceous. Although the territory occupied by these groups, are to a considerable extent, covered by drift, still there are areas where the rocks approach near, or quite, to the surface, and form *black*, and, bald prairies, analagous in appearance and origin to those of the cretaceous, though of much smaller extent and with subsoils, unlike the true prairies, of same material as soils, reaching down to the calcareous beds which produced them. The soils are grey or yellow calcareous clays, and much that has been said under "True Prairies," can be applied to these. Occasionally some of these prairies are "*salty*" in addition to being "*bald*," which is due to a small amount of gypsum found in the yellow clay, and are called "*Gypseous*' prairies," in contradistinction to the common or "*shell prairies*." No Gypsum, however, in workable quantities, has yet been found in any part of the State, though fine crystalized specimens have been obtained by the writer, from Clark, Choctaw, and Russell counties. The Zeuglodon, a mammoth fossil often 100 feet in length, allied to the whale tribe, is found in the Jackson group in this State and Mississippi.

Grand Gulf Group: This is the long leaf pine region of our State, and, though known in geology as a division of the

Tertiary, the entire surface is everywhere covered with *drift*. No section of the State presents such a uniformity of soils, vegetation, and configuration of surface. The latter is usually level or gently undulating, save where it approaches large water courses, where it falls rather abruptly. These soils are in the main, sandy, occasionally resting upon thin clays, and very porous; hence, rains falling upon them, are rapidly absorbed. This property of the soil, while it insures them against gullies and washes, makes them also very unretentive of any fertilizer that may be put upon them. The prominent forest tree is the long leaf pine, ("Pinus Australis,") which grows upon the hills, and even, in some instances, to the verge of the bottoms, but not in the bottoms themselves; there they give way to other vegetation which requires richer soils. In all this country wherever we find the long leaf pine supplanted by other growth, it is an infallible sign of an improvement in the soil. Where the long leaf pine occurs alone, the soil will rarely pay for cultivation, unless on hill-sides or in the bottoms. These bottoms yield well, although their soils are nearly all sand, since the roots of the plants are enabled to penetrate and forage over a large area. Notwithstanding the unproductiveness of this country, some of it is beautiful to look upon. Enormous tracts of sparsely settled, straight, clear limbed pines, waving their tops in mournful melancholy, sloping away as far as the eye can reach, with an undergrowth of long grass, interspersed with the most brilliantly tinted flowers, are everywhere common and present spectacles of the rarest beauty and proportions. The Indians once destroyed annually at the *right* season, the native undergrowth by fire, thus preserving a most excellent pasturage for stock—but their Anglo-Saxon successors, either through ignorance or improvidence, are fast destroying these natural pastures by applying the torch at the *wrong* season, and thus burning out the roots and parching the seed of the native grasses. This burning should always be done in the late fall or early spring, when the ground is wet or moist. The following analyses, taken from Hilgard's Geology of Mississippi, will serve as a type to most of the soils of this formation in Alabama. No. 1 is a Pine Upland soil, from Summit, Pike county, Mississippi, taken to a depth of 9 inches. Vegetation, Long Leaf Pine, Post, Spanish (red), and (true) Red Oaks. Somewhat ashy, color yellowish buff. No. 2 is subsoil of same, taken to a depth from 9 to 20 inches. Color orange yellow, rather sandy loam.

	No. 1	No. 2
Insoluble Matter.....	88.980	77.931
Potash.....	0.218	0.266
Soda.....	0.076	0.072
Lime.....	0.034	0.152
Magnesia.....	0.806	0.352
Manganese.....	0.072	0.091
Peroxide Iron.....	2.402	5.456
Alumina.....	3.783	11.870
Phosphoric Acid.....	0.036	0.043
Sulphuric Acid.....	0.038	0.035
Organic Matter and Water.....	3.446	3.261
	<hr/> 100.202	<hr/> 99.934

Dr. Hilgard remarks that these analyses show: 1st. That both the soil and subsoil are considerably below the average in native fertility, *i. e.*, the absolute amount of nutritive ingredients contained in them. 2d. That there is but a small difference in this respect between soil and subsoil, being, nevertheless, decidedly in favor of subsoil, especially with regard to lime in which the surface soil is unusually poor. There is one important difference, however, in the retentiveness of the two materials, the surface soil being defective in this particular, while the subsoil possesses the property in a degree somewhat unusual in materials of equal lightness. These facts offer very important suggestions concerning the improvement of these soils. They show that stimulant manures alone will be of little avail on this soil, which, being naturally poor, will require nutritive manures to supply the deficiency. They show that these manures will be but slightly retained in the surface soil, but powerfully so in the subsoil; hence deep plowing and subsoiling will be necessary in order not only to increase the retentiveness of the surface soil but also to make the subsoil accessible to the roots, thereby diminishing also, the liability to injury by drouth; thus treated the land will be susceptible of improvement to any extent. Without deep plowing, the manure will, to a great extent, be carried beyond the reach of plants.

Remarks on Tertiary Soils. Nearly all these soils (save those in prairies and bottoms) require nutritive manures for their improvement. And if the subsoil be of a character which will admit of improvement, the means at the command of the farmer is adequate for its enrichment. Pine straw, which exists in such large quantities, though heretofore regarded as of doubtful utility as a manure, has by analysis, yielded such results as to commend it to the use of every farmer in the country. According to Dr. Hilgard this straw contains, when

burnt, two and one-half per cent. of ash, which yielded, upon analysis, the following result:

Silica with sand.....	65.242
Potash.....	5.530
Soda.....	0.416
Lime.....	13.860
Magnesia.....	5.208
Manganese.....	1.681
Peroxide of Iron.....	0.141
Alumina.....	4.539
Phosphoric Acid.....	1.154
Sulphuric Acid.....	0.894
Chloride of Potassium.....	1.479

100.148

We find here notable quantities of all valuable plant food. Pine straw, therefore, properly decayed and applied to the soil, supplies those mineral ingredients which cultivated plants remove. A ton of *freshly fallen* pine straw will supply potash and Phosphoric Acid enough for a 500 pound bale of lint cotton, provided seed, stalk, etc., be carefully returned. Other crops, such as wheat, corn, etc., will require larger quantities of straw, and the addition also of superphosphate. But while pine straw is so valuable as a fertilizer, it should never be used without being first thoroughly composted. This is easily accomplished by mixing it with lime, ashes, or some of the valuable marls, found everywhere throughout this part of the State. Wherever practicable, muck and some kinds of clay would prove valuable additions to the compost heap. By utilizing the straw which falls upon 3 acres, in manuring one, small farms of considerable productiveness could be everywhere established throughout this part of the State—farms which would be admirably adapted for garden products and fruits. This section of the State, together with the part south of Mobile, is, from position, climate, and soil, pre-eminently adapted to the raising of early vegetables and fruits, for the Northern markets, and recently, since opportunities for rapid transportation have been afforded by several of our main lines of railroad leading North, a large and thriving business has been carried on. This business is on the increase, and it would not be surprising to see this country now, so thinly settled, in a short while filled with a thrifty and industrious class of market gardeners and fruit growers—such as now occupy the shores of New Jersey and Virginia, (around Norfolk). This country has now an industry of gigantic proportions. The timber interest is enormous, and large quantities are shipped annually from Mobile and Pensacola, to all parts of the world.

THE QUATERNARY, OR POST TERTIARY.

These formations in Alabama are represented: 1st. By the *Drift*, or Orange sand, corresponding perhaps to the drift of the Northern States, and forming the surface soil of much of the country already described. So much has therefore been necessarily said of this formation in connection with the other periods, that further comments would be superfluous. 2d. The Bluff formation, occurs along the lower Alabama and Tombigbee rivers, and consists of yellow calcareous fine-grained silt, overlying the Drift, and is itself overlaid, by, 3d., the Yellow Loam so often found overlying, like the Orange sand, much of the State, especially the Southern portion. 4th. The Second Bottoms, and 5th, the Alluvium, represented in this State by small but valuable areas of arable lands, make up the remainder of this formation. No proper discussion of these soils can be made, since they must vary in character and composition according to the pre-existing soils, from which they were formed. The last (5th) are annually enriched by the overflows of streams bringing along with the mineral matter much partially decayed vegetation.

In the limits of a few pages, it is impossible to give more than an outline of the soils of Alabama, but enough has been said, I hope, to convince every reader that the State of Alabama, for native fertility of her soils and manurial resources, is not inferior to any State in the Union. Add to these her position, her genial climate, her extensive means of transportation, her postal facilities, her numerous churches, her school system, good water, and fine health, and nothing is wanting to make her, as she is, one of the most desirable countries in the world.

Part Eleventh.

*The Forests of Alabama, and their Products.**

BY

CHARLES MOHR, OF MOBILE, ALABAMA.

The fifty thousand square miles which make up the area of this State were, originally, a nearly unbroken forest—it may be said up to the end of the first quarter of this century; with the exception of a comparatively small area of prairie land, and grassy savannas in the southern portion of its centre. According to the latest statistics†, seven-tenths of this forest are still existing, amounting to 20,630,963 acres; some of it culled of its largest timber growth, but the greater part in its virgin state, scarcely touched by the axe. One-half of the lands owned by the farmers are yet wood lands. The heaviest timbered lands are found in the southern part of the State within the great maritime pine belt, where the forest area amounts to 66 per cent.; in the central counties, situated in the prairie region and embracing the cotton belt, it amounts to 45 per cent.; in the broken mountainous part, embracing the mineral region and extending to the waters of the Tennessee river, to nearly 70 per cent.; and in the northern part, with the rich agricultural land in the Tennessee valley, to 60 per cent.

According to the distribution of the prevailing trees, determined by climatic influences, the nature of the soil, and the topographic features of the country, the forests of this State present three characteristic regions. Distinct as they are by peculiar features, their boundaries cannot be defined by a distinct line—one region passing almost imperceptibly into the other.

The first, or lower, region is formed by the great pine belt of the Gulf coast—the continuation of the immense pine forest which extends from the eastern bank of the Mississippi to the shores of the Atlantic ocean. It covers the southern part, uninterruptedly, from east to west, and extends from one hundred to

* Written expressly for this HAND-BOOK.

† Report of Department of Agriculture, for 1875.

one hundred and fifty miles into the interior. This area is almost exclusively occupied by coniferous trees—the undulating dry and sandy uplands entirely by the long leaved, or yellow pine, the most important while most valuable of our timber trees, which arrives here at its greatest perfection. On the lands more level and with a substratum more retentive of moisture, it is accompanied by the pond pine, and the loblolly, or old field pine. Following the sandy and gravelly deposits of the drift, the limits of that formation determine the northern boundary of the pine region, proper. A growth of pine trees, however, prevails wherever the siliceous constituents of the drift soil mingle with the outcrops of the tertiary strata. This is the great timber region of the State. Traversed centrally and towards the east by the numerous tributaries of the Escambia river, a large share of its products finds an outlet in Pensacola; westwardly the Alabama and Tombigbee rivers with their affluents, offer an access to the sea by the port of Mobile; while a small portion along the western boundary line of the State by the eastern tributaries of the Esquatawba river is attracted to the mills and wharves along the Pascagoula river. The products of this forest of yellow pine assume, with every year, a greater importance to the business of the Gulf ports; and their exports from the seaport of this State, entering only since the beginning of this decade in competition with its neighbors, show a steady and rapid increase in the production and export of sawed lumber, square timber, spars, shingles, and particularly in the receipt of naval stores. A proper idea of the great wealth offered by this lumber region of our State, almost exclusively derived from one single species of Pine, will be gained from the following statements taken from the reports of The Mobile Board of Trade, exhibiting the receipts and exports of lumber and naval stores from that port since the year 1872 to the present time: the exports of sawed lumber amounting in 1872, to 4,000,000 feet, increased to 7,000,000 in the following year, to 12,000,000 in 1876, to 18,000,000 in 1877, and it can be safely assumed that in this year (1878) the export will not fall short of 20,000,000 feet, representing a value of at least \$200,000.

The production of naval stores exhibits an equally rapid increase. The rosin and spirits of turpentine reaching the Mobile market from the adjacent country, in 1873, amounted to \$750,000, showing already, at that period, an increase of 50 per cent. over the production of any former year; increasing to over \$1,000,000 in 1874; and in the year 1876, the receipts were much greater, their value amounting to \$1,200,000, involving a vastly

increased production by the much reduced prices of these articles ruling during the last two years. In these sums, the quantities required for home consumption are not included. If those, and the quantities of sawed lumber and squared timber derived from the pine belt within the confines of our State, and which are exported from Pensacola, so far the chief centre of the lumber business on this coast, are considered, the amounts given above will certainly be doubled. Lastly, with the exhaustion of the yellow pine forest that encircled Pensacola bay, and of those in convenient reach upon the coast of continental Florida, a very large quota of the saw logs are drawn from Alabama by the tributaries and head waters of the Escambia and the Perdido river.

The average height of the yellow pine in the virgin forest is from sixty to seventy feet, with a diameter of 12 to 18 inches for two-thirds of its height. It is of slow growth, particularly at the later periods of its life. According to the number of annual rings, trees of the above dimensions must have reached an age of 60 to 70 years. The reproduction of a tree from the seed, furnishing an equal supply of timber, would at this rate take about two generations. It is a poor seeder, as the younger Michaux observed. In unfruitful years, a forest of hundreds of miles may be ransacked without finding a single cone, and these, according to my observations, are far more frequent than fruitful ones. In its struggle for existence in our days, the odds of a survival of its kind amongst the arborescent vegetation that disputes its ground are greatly against it. Taken from the flat and moist lands, and it is replaced almost exclusively by the pond and old field pine; the hilly, broken, dry upland, denuded of the grand old pine forest, is with surprising rapidity covered by a dense and scrubby growth of blackjack, turkey oak, scarlet and upland willow oak, above which, seldom a young yellow pine raises its head, crowned with its large white-fringed terminal bud. Full of resinous juices, through all stages of its life, the young trees are not as able to withstand the raging fires that annually devastate the woods, as the less resinous species, and the deciduous leafed trees; besides that being of much slower growth, this noble tree is doomed to extinction, if not protected by the aid of man. On tracts sheltered from the invasion of fire, groves of young trees, from 15 to 20 feet high, can be observed around Mobile, testifying that its existence for the future can in some measure be secured, if protected from these destructive influences, unnecessarily caused by man. The utmost efforts by an enlightened community, should be made through active and efficient State

legislation, without further delay, to guard against the calamity of a total destruction of such a magnificent estate entrusted to the hands of our people. Besides its ^{own} contributions to the manifold necessities of the agriculturist, the builder, in naval architecture, the construction of railroads, the arts, medicine, and the innumerable smaller demands of domestic economy and the varied industries of the world, the influences of this great pine belt upon the climatic conditions and the salubrity of this coast are even of more far reaching importance to the interest of the community at large, extending far outside of its confines. Rearing its horizontally outspreading limbs high up into the atmospheric ocean, their branches densely clothed with the long, slender leaves, the forest of these trees present to the canopy of heaven, for many hundred of square miles, an unbroken sheet of perpetually active vegetation, whose forces at such an altitude affect a constant attraction to the fleeting clouds, causing them to deposit their life-giving and supporting humidity, in grateful showers over a very large area with wonderful regularity during all seasons. To this fact is due the delightful climate of this part of our country, equalizing its temperature particularly in tempering the rigors of the long summers of a region near the tropics. During the great progress in meteorological science of late years, the fact has been established that in their exercise upon the conditions of the atmosphere as regards the precipitation of its moisture, the pine trees stand unrivalled amongst all other trees of the forest. Robbed of this protection, the hills and plains of the Gulf region, now blooming and clothed with the richest verdure, would be arid and parched, presenting as forbidding and austere an aspect as those of the denuded coasts of Africa along the Mediterranean sea, devoid of productive power, and unfit for the habitation of civilized man, smarting under the scorching rays of the sun. The efforts of nature are ever directed to recuperation in its aims to insure the existence of different forms of the living organisms from generation to generation. To secure to our posterity the blessings enjoyed by us by its bounty, in assisting these efforts as dictated by her laws, is a stern duty imposed upon us. Its discharge in the prevention of a wanton destruction of our forests, and the adoption of measures regulated by the light of science, common sense, and the proper regard to the future of our State, should engage the attention of every intelligent and patriotic citizen, appealing particularly to the owners of the soil. Of little importance to agriculture and industry, are the other species of pines found in this region. Of considerably

smaller dimensions than the yellow pine, and of a soft and sappy wood, they have, as timber trees, but a small value. On account of their rapid growth, they are, however, important resources of fire wood, and of a lumber of inferior quality, fit for ordinary purposes, as the manufacture of boxes, etc.

Next to the yellow pine in importance, follows the Cypress—*Taxadium destichum*. It grows in great abundance on the perpetually overflowed banks of, and in the marshes skirting, the rivers in the tide water region, as well as the deep inundated swamps in the pine region from which issue the feeders of the innumerable creeks that water the pine belt. Here, it reaches gigantic dimensions—trunks from a hundred and more feet in height, and from twenty-five to forty feet in circumference above the conical base, are frequently met with in the forest swamps of the Tensaw river. Logs, of three to four feet in diameter, are often floated down to the shingle yards and saw mills of Mobile. Its lumber finds a variety of application. It is mostly sawed into planks for exportation, lately in increasing quantities; much of it is used in the manufacture of doors, window-sashes, and other cabinet work, and in that of shingles. For posts, it is scarcely rivaled, resisting the action of water for ages.

The Juniper,—*Cupressus thyoides*, is gaining, of late years, with the manufacture of woodenware, the attention which by the excellent qualities of its wood, it deserves. This fine tree is found in great perfection on the low land skirting our great rivers, and in the large forest swamps of the low pine barrens, preferring a partially inundated soil. Soft, light, easily worked, of a fine grain admitting of high finish and pleasing hue, when well seasoned its wood offers the finest material, particularly for the manufacture of hollowware. This industry, lately established in Mobile, is capable of great development, as by the inexhaustible supply of timber within easy reach, such goods can be made cheaper here than in any other part of the United States.

The Live Oak—*Quercus virens*, has ceased to be a source of timber here. The excellent qualities of its wood, particularly fitting it for ship building, has, like everywhere else on the Gulf coast, led to a rapid destruction of the stately groves that extended along our seashore. It is only by the effort of the owners of the land who have a love for that which is grand and lovely in nature, that these beautiful and noble trees will be preserved, and not cease to form one of the most pleasing features in the landscape of our coast.

The black jack, turkey oak, spanish oak, upland willow oak,

and a more or less scrubby growth of black and red oaks, with a sprinkling of hickory, form the second growth on the denuded dry pine land. These furnish the supply of hard fire-wood. The growth of these trees on the poor looking lands is indeed surprising, forming, after fifteen or twenty years, when protected from fire, fine large groves. The water ash, growing with the sweet bay and juniper, in the low, inundated swamps, must be mentioned as one of the trees furnishing much of the fire wood. The light, yet tenaceous, wood of the sweet bay, is much used for broom handles. The grand and sober monotony that characterizes the pine forest, finds a pleasant relief in the thickets and glades of evergreen shrubs and various smaller trees which fringe the water courses and swamps. The red bay, sweet bay, small gum tree, wax myrtle, with a dense growth of the *ti-ti*, interspersed by dahoons, hollys, and red maple, intertwined by a variety of climbers and vines, thorny, like those belonging to the different kinds of smilax, adorned with flowers, as the yellow jessamine, the graceful wistaria, and peculiar crossvine, form impregnable thickets, the home of the wild cat, the panther, and the bear. The lands above high water, in the maritime plains of the pine region, with a soil richer in vegetable mould, are the home of the lofty magnolias, the live oak, water oak, associated with the pond pine. These are called hammock lands. They harbor an undergrowth of shrubbery unsurpassed in variety and beauty. There the sweet illicium, and the calycanthus, or spice shrub, are found, with rich blooming andromedas, blueberries, azalias, and the gorgeously blooming kalmia, or sheeps laurel. There the fragrant storax shrubs, the delicate halesia and fringe tree, with the cyrilla, stuartia and clethra, unfold their snowy flowers, with many others, delighting the eye, by the richness of their bloom, from the earliest beginning of the spring to the end of the summer, offering a lasting feast to the bee, which for the largest part of the year is here found to gather the sweet treasures, distilled in the flowery cups. As a honey producing country, this district can be scarcely rivaled.

Where the limestones and the marls of the tertiary and cretaceous formation begin to prevail, free from the cover of sandy drift soil, the second forest region of the State is entered. Here the evergreens give way to the largely preponderating trees with deciduous leaves, and the pine is confined to the poor ridges and thinnest soils. The forest growth is originally interrupted by more or less extensive savannas. The post oak covers, in extensive tracts, the stiffer calcareous soils. White oaks, the overcup

oak, and the willow oak, with ash trees, elms, walnuts and hickories, cover the richer black lands, composing fine woods, full of useful timber of large dimensions. As a timber region for export, it has yet no importance, only a limited quantity of oak staves reach the seaboard by the Mobile and Tombigbee rivers. The richest agricultural districts of the State are embraced in these regions. At its northern limits it borders upon a deposit of drift, which traverses the State from northwest to southeast, 4 to 5 miles wide at its southern, reaching gradually towards its northern end a width of 30 to 35 miles. Like the great coast pine belt, it is covered with an almost continuous forest of the yellow pine, whose products so far serve only to supply the demand of the surrounding country.

Beyond this drift belt, in the eastern half of the State, the generous red lands of the metamorphic region are covered, where not deprived of it by cultivation, with magnificent oak forests. Here, at an altitude of from 800 to 1,200 feet above the level of the Gulf, the types of a Southern vegetation are missing, but the occurrence of the water and willow oak, the overcup and spanish oak, as well as the frequency of large yellow pines, which cover the crests of the elevated rocky mountain ranges, and the more barren hills with a rocky, siliceous soil, still impress on this region, a Southern character. The latter tree is replaced, gradually, towards the north, by the short leaved pine, *Pinus mitis*, which furnishes, in the upper district, a great part of the lumber of excellent quality. The more sterile and broken mountainous country, east and west, embracing the mineral lands of the State, is covered with dense forests of black and red oaks, the smooth hickory, sparsely intermixed with scrub pines. In the more elevated ranges, the mountain chestnut oaks, and the chestnut tree, prevail, the latter rapidly dying out. The numerous fertile valleys are harboring fine woods, composed of trees delighting in a richer soil.

The third and most northern sylvan region of the State begins with the limestone formation of the Tennessee valley. Species of the woody vegetation, characteristic of the lower latitudes, are no more seen, or when met with, as dwarfed stragglers. The maples, the tall hickories, the stately elms, walnuts, wild cherry, hackberries, nettle trees, with shady groves of beach, make up the forest growth, bearing the same character as the forest flora of the western declivity of the Appalachian Mountains, south of the Ohio river. The Southern magnolias are represented here by the umbrella tree, the cucumber tree, and the mighty white poplar, or tulip tree.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.*
No. 1.	Magnoliaceæ.	Illitium Floridanum, Ellis†	Sweet Illitium.	Evergreen Shrub.	Coast.
No. 2.	"	"Magnolia grandiflora, L.	Magnolia	Evergreen large tree.	Coast to central.
No. 3.	"	"Magnolia glauca, L.	Sweet Bay.	Evergreen tree.	Coast.
No. 4.	"	"Magnolia macrophylla, Mx.	Large leaved Magnolia.	Deciduous, small tree.	Lower to central.
No. 5.	"	"Magnolia Fraseri, Walt.	So'th'in Cucu'ber tree.	Large tree, deciduous.	Lower to central.
No. 6.	"	"Magnolia acuminata, L.	Cucumber tree.	Large tree, deciduous.	Lower to upper.
No. 7.	"	"Magnolia Umbrella, Lam.	Umbrella tree.	Medium tree, decid's.	North Alabama.
No. 8.	"	"Magnolia cordata, Mx.	Yellow flowered Mag.	Small tree, deciduous.	North Alabama.
No. 9.	"	"Liriodendron tulipifera, L.	Tulip tree.	Poplar.	Lower to north.
No. 10.	Anonaceæ.	Asimina triloba, Dun.	Pawpaw.	Small tree or shrub.	North Alabama.
No. 11.	"	Asimina parviflora, Dun.		Small shrub.	Coast.
No. 12.	Camelliaceæ.	Gordonia Lasianthus, L.	Loblolly bay.	Ev'gr'n tree or shr'b.	Coast.
No. 13.	"	S uardia Virginica, Cav.		Shrub.	Coast to north.
No. 14.	Tiliaceæ.	Tilia Americana, L.	Basswood	Linden tree	Lower to north.
No. 15.	Rutaceæ	Zanth'xyl'n Car'lip'm, Lam.	Southern Prickly Ash.	Small tree or shrub.	Coast to central.
No. 16.	"	Ptelea trifoliata, L.	Hope tree or trifol.	Shrub, mts.	North Alabama.
No. 17.	Meliaceæ.	Melia Azederach, L.	Chinaberry tree.	L'ge tree, intr'duc'd.	Lower.
No. 18.	Anacardiaceæ.	Rhus typhina, L.	Common Shumac.	Shrub	Central to north.
No. 19.	"	Rhus glabra, L.	"	Shrub	Tallahpoosa.
No. 20.	"	Rhus copallina, L.	"	Shrub	Coast to north.
No. 21.	"	Rhus venenata, DC.	Poison elder.	Shrub	Coast to north.
No. 22.	"	Rhus Toxicodendron, L. in varieties.	Poison Ivy and Oak.	Everywhere.	Mobile.
No. 23.	Vitaceæ.	Vitis aromatica, Ait.		Central to north.	Tallahpoosa.
No. 24.	"	Vitis (cissus) incisa, Nutt.		Evergreen shrub.	Coast.
No. 25.	"	Vitis (cissus) bipinnata, T. & G.		Deciduous shrub.	Coast.
No. 26.	"	Vitis æstivalis, L.	Summer grape.	Coast to central.	Mobile.
No. 27.	"	Vitis vulpina, L.	Bull grape, Muscadine	Coast to north.	Mobile.
No. 28.	"	Vitis Labrusca, L.	Fox grape.	Coast to upper.	Mobile.
No. 29.	"	Ampelopsis Virginica, Mx.	Virginian creeper.	Coast to north.	North Alabama.
No. 30.	Rhamnaceæ.	Berchemia volubilis, DC.	Smiple Jack.	Creeping shrub.	Coast.

* This Heading is intended to designate the Counties in which the specimens were collected by the writer.

† The names, initials, and abbreviations of names, immediately to the right of the Botanical names, indicate the authors of the plant names.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 31.	Rhamnaceæ.....	Sageretia Michauxii, Bron..	Evergreen shrub.....	Coast.....	Mobile.
No. 32.	"	Rhamnus lanceolatus, Pursh	Deciduous shrub.....	Central.....	Wilcox.
No. 33.	"	Rhamnus parviflorus, Buck	Deciduous shrub.....	Central.....	Wilcox.
No. 34.	"	Frangula Caroliniana, Gray	Small tree.....	Coast.....	Mobile.
No. 35.	Celastraceæ.....	Euonymus Americanus, L.	Small shrub.....	Coast to northw'd	Mobile.
No. 36.	"	Euonymus atropurpureus, Jacq	Small shrub.....	Central to northw'd	Mobile.
No. 37.	Staphyleaceæ	Spindel tree.....	Large shrub.....	Central to north.....	Tallapoosa.
No. 38.	Sapindaceæ	Staphylea trifolia, L.....	Small shrub.....	Lower.....	North Alabama.
No. 39.	"	Aesculus Pavia, L.....	Shrub.....	Central to upper.....	Mobile.
No. 40.	"	Aesculus parviflora, Walt.	Shrub.....	Central to upper.....	Wilcox.
No. 41.	Aceraceæ.....	Aesculus flava, Ait.....	Small tree or shrub.....	Central to upper.....	Montgomery.
		Acer saccharinum, var. nigrum.....			
No. 42.	"	Black sugar maple.....	Large tree.....	Lower to north.....	Clarke.
No. 43.	"	Acer dasycarpum, Ehr.....	Large tree.....	North.....	
No. 44.	"	Acer rubrum, L.....	Small tree.....	Coast to north.....	Mobile.
No. 45.	Leguminosæ..	Negundo aceroides, Mich.....	Small tree.....	North.....	
No. 46.	"	Amorpha fruticosa, L.....	Shrub.....	Coast to northw'd	Mobile.
No. 47.	"	Amorpha herbacea, Walt.....	Shrub.....	Coast.....	Mobile.
No. 48.	"	Robinia Pseudacacia, L.....	Tree.....	Com'n ev' yw h'e	Mobile.
No. 49.	"	Robinia viscosa, Vent.....	Mountain.....	North.....	
No. 50.	"	Wistaria frutescens, DC.....	Climber.....	Coast to westw'd	Mobile.
No. 51.	"	Erythrina herbacea, L.....	Small shrub.....	Coast.....	Mobile.
No. 52.	"	Gleditsia triacanthos, L.	Tree.....	Common.....	Mobile.
		Gleditsia monosperma, Walt.....			
No. 53.	"	Cercis canadensis, L.....	Small tree.....	North.....	
No. 54.	Rosaceæ.....	Redbud.....	Small tree.....	Lower to north.....	Mobile.
		Chrysobalanus oblongifolius, Mx.....			
No. 55.	"	Prunus Americana, Mar.....	Small shrub.....	Coast.....	Mobile.
No. 56.	"	Prunus umbellata, Ell.....	Small tree.....	Central to north.....	Tallapoosa.
No. 57.	"	Prunus Chicasa, Mx.....	Southern Bullace plum	Central.....	Tallapoosa.
No. 58.	"	Prunus serotina, Ehrh.....	Chickasa plum.....	Coast.....	Mobile.
		Wild cherry.....	Large tree.....	Lower to north.....	Mobile.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 59. Rosaceæ.	<i>Prunus Caroliniana</i> , Ait.	Mock orange.	Small tree.	Coast.	Mobile.
No. 60. "	<i>Spiræa opulifolia</i> , L.	Rine bark.	Small shrub.	Central.	Tallapoosa.
No. 61. "	<i>Neviusia Alabamensis</i> , Gray		Small shrub.	Central.	Tuscaloosa.
No. 62. "	<i>Rubus trivialis</i> , Mx.	Southern Dewberry.		Coast to north.	Mobile.
No. 63. "	<i>Rubus villosus</i> , Ait.	Blackberry.		Com'n ev'wh're	Mobile.
No. 64. "	<i>Rosa laevigata</i> , Mx.	Cherokee rose.		Coast.	Mobile.
No. 65. "	<i>Rosa lucida</i> , Ehr.	Dwarf wild rose.		Upper districts.	Mobile.
No. 66. "	<i>Rosa Carolina</i> , L.	Swamp rose.		Central to north.	
No. 67. "	<i>Cratægus apiifolia</i> , Mx.		Small shrub.	Central to upper.	Montgomery.
No. 68. "	<i>Cratægus parvifolia</i> , Ait.		Small shrub.	Coast.	Mobile.
No. 69. "	<i>Cratægus spathulata</i> , Mx.		Small shrub.	Central.	Tallapoosa.
No. 70. "	<i>Cratægus tomentosa</i> , L. var. mollis Gr.				
No. 71. "	<i>Cratægus flava</i> , Ait.	Summer Haw.	Small shrub.	Lower to north.	Clarke.
No. 72. "	<i>Cratægus astivalis</i> , T & Gr.	Apple Haw.	Shrub.	Lower to central.	Mobile.
No. 73. "	<i>Cratægus arborescens</i> , Ell.	Haw.		Lower to upper.	Mobile.
No. 74. "	<i>Pyrus arbutifolia</i> , L. var. erythrocarpa.				
No. 75. "	<i>Pyrus arbutifolia</i> , var. melanocarpa.	Chokeberry.	Small shrub.	Coast to north.	Mobile.
No. 76. "	<i>Amelanchier Canadensis</i> , var. <i>Botryapium</i> .			Central to north.	Tallapoosa.
No. 77. Calycanthaceæ	<i>Calycanthus floridus</i> , L.	Spice bush.	Sm. tree, service ber'y	Com'on ev'wh'e	Mobile.
No. 78. "	<i>Calycanthus levigatus</i> , Willd.		Shrub.	Central.	Tallapoosa.
No. 79. Saxifragaceæ	<i>Itea Virginica</i> , L.		Shrub.	Lower.	Mobile.
No. 80. "	<i>Hydrangea arborescens</i> , L.		Shrub.	Coast.	Mobile.
No. 81. "	<i>Hydrangea radiata</i> , Walt.		Shrub.	Central to north.	Tallapoosa.
No. 82. "	<i>Hydrangea quercifolia</i> , Bart		Shrub.	Lower to central.	Clarke.
No. 83. "	<i>Philadelphus inodorus</i> , L.	Syringe.	Shrub.	Central.	Tallapoosa.
No. 84. "	<i>Decumaria barbara</i> , L.		Shrub.	Central to upper.	Wilcox.
No. 85. Hamamelaceæ.	<i>Hamamelis Virginica</i> , L.	Witch hazel.	Climbing shrub.	Coast.	Mobile.
No. 86. "	<i>Liquidambar styraciflua</i> , L.	Sweet gum.	Large shrub.	Coast to north.	Mobile.
			Tree.	Com'on ev'wh'e	Mobile.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 87.	Araliaceæ.....	Aralia spinosa, L.....	Shrub to small tree.....	Com'n ev' ywh'te Mobile.	
No. 88.	Cornaceæ.....	Cornus florida, L.....	Dogwood.....	Small tree.....	Mobile.
No. 89.	"	Cornus sericea, L.....	Silky Dogwood.....	Shrub.....	Lower to north... Clarke.
No. 90.	"	Cornus stricta, Lam.....	"	Shrub.....	Central to north... Tallapoosa.
No. 91.	"	Cornus asperifolia, Mx.....	"	Shrub.....	Central..... Tallapoosa.
No. 92.	"	Nyssa multiflora, Wang.....	Black gum.....	Large tree.....	Com'n ev' ywh'te Mobile.
No. 93.	"	Nyssa aquatica, L.....	Black gum.....	Large tree.....	Com'n ev' ywh'te Mobile.
No. 94.	"	Nyssa uniflora, Walt.....	Swamp Tupelo.....	Small tree.....	Lower to upper... Baldwin.
No. 95.	Caprifoliaceæ	Symphoricarpos vulgaris, Mx.	"	Small shrub.....	North Alabama.
No. 96.	"	Sambucus Canadensis, L...	"	Shrub or small tree.....	Com'n ev' ywh'te Mobile.
No. 97.	"	Lonicera empervirens, Ait. Trumpet Honeysuckle.	"	Shrub or small tree.....	Coast..... Mobile.
No. 98.	"	Viburnum nudum, L.....	White Rode.....	Shrub or small tree.....	Coast to northw'd Mobile.
No. 99.	"	Viburnum prunifolium, L.. Blackhaw.....	"	Shrub or small tree.....	Lower to north... Clarke.
No. 100.	"	Viburnum Lentago, L.....	"	"	Lower to north... Clarke.
No. 101.	"	Viburnum acerifolium, L.... Arrow wood.....	"	Upper.....	Tallapoosa.
No. 102.	"	Viburnum dentatum, L.... Arrow wood.....	"	Upper.....	Tallapoosa.
No. 103.	Rubiaceæ.....	Cephalanthus oc' id' ntalis, L Button bush.....	"	Com'n ev' ywh'te Mobile.	
No. 104.	Ericaceæ.....	Gaylussacia dumosa, T. & Gr Dwarf Huckleberry....	Small shrub.....	Coast.....	Mobile.
No. 105.	"	Gaylussacia frondosa, T & Gr High Huckleberry.....	"	Coast.....	Mobile.
No. 106.	"	Vaccinium arboreum, Mat. Farkleberry.....	"	Small tree, evergreen Coast to upper.....	Mobile.
No. 107.	"	Vaccinium myrsinites, Mich	"	Small shrub, ev' rgr'n Coast.....	Mobile.
No. 108.	"	Vaccinium tenellum, Ait...	"	Small shrub.....	Mobile.
No. 109.	"	Vaccinium corymbosum, L.. Swamp Blueberry.....	"	Coast to north.....	Mobile.
No. 110.	"	Andromeda nitida, Bart....	"	Small shrub.....	Mobile.
No. 111.	"	Andromeda ligustrina, Muhl	"	Small shrub.....	Coast to north... Mobile.
No. 112.	"	Leucothoë axillaris, Don..	"	Small shrub.....	Coast..... Mobile.
No. 113.	"	Leucothoë racemosa, Gr....	"	Small tree.....	Coast to north... Mobile.
No. 114.	"	Oxydendrum arboreum, DC. Sorel tree.....	"	Shrub.....	Coast to north... Mobile.
No. 115.	"	Clethra alnifolia, L.....	White Alder.....	Shrub.....	Coast to north... Mobile.
No. 116.	"	Kalmia latifolia, L.....	Calico shrub.....	Shrub.....	Coast to north... Mobile.
No. 117.	"	Kalmia hirsuta, Walt.....	Wicky.....	Small shrub.....	Coast..... Mobile.
No. 118.	"	Azalea hirsuta, L.....	White honeysuckle.....	Shrub.....	Coast to north... Mobile.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 119.	Ericacæ.....	Azalea nudiflora.....	.....	Coast to north.....	Mobile.
No. 120.	Aquifoliacæ.....	Ilex opaca, Ait.....	.....	Evergreen small tree.....	Lower to upper... Mobile.
No. 121.	"	Ilex Cassine, L.....	.....	Holly.....	Coast..... Mobile.
No. 122.	"	Ilex Dahoon, Walt.....	.....	Shrub, evergreen.....	Coast..... Mobile.
No. 123.	"	Ilex decidua, Walt.....	.....	Evergreen tree.....	Coast..... Mobile.
No. 124.	"	Ilex Amelanchier, Curt.....	.....	Shrub.....	Coast..... Mobile.
No. 125.	"	Ilex glabra, Gray.....	.....	Shrub.....	Mountains .. Talladega.
No. 126.	"	Ilex coriacea, Chap.....	.....	Shrub.....	Coast..... Mobile.
No. 127.	"	Ilex verticillata, Gr.....	.....	Large shrub.....	Coast..... Mobile.
No. 128.	Styracacæ.....	Black Alder.....	.....	Small shrub.....	North Alabama.
No. 129.	"	Styrax pulvernenta, Mx.....	.....	Small shrub.....	Lower to north... Mobile.
No. 130.	"	Styrax grandifolia, Ait.....	.....	Small shrub.....	Lower to north... Mobile.
No. 131.	"	Halesia diptera, L.....	.....	Small shrub.....	Mountains..... Talladega.
No. 132.	"	Halesia tetraptera, L.....	.....	Small tree.....	Lower..... Mobile.
No. 133.	"	Symplocos tinctoria, L'Her.....	.....	Small tree.....	Central to upper.. Tallapoosa.
No. 134.	Cyrillacæ.....	Cyrilla racemiflora, Walt.....	.....	Small tree.....	Coast..... Mobile.
No. 135.	"	Cliftonia ligustrina, Banks.....	.....	Small tree.....	Coast..... Mobile.
No. 136.	Ebenacæ.....	Diospyros Virginiana, L.....	.....	Tree.....	Coast..... Mobile.
No. 137.	Sapotacæ.....	Bumelia lycioides, Gert.....	.....	Tree.....	Common..... Mobile.
No. 138.	"	Bumelia lanuginosa, Pers.....	.....	Small tree.....	Coast to north... Mobile.
No. 139.	Bignoniacæ.....	Catalpa bignonioides, Walt.....	.....	Small tree.....	Coast to north... Mobile.
No. 140.	"	Tecoma radicans, Juss.....	.....	Small tree.....	Coast to north... Mobile.
No. 141.	"	Bignonia capreolata, L.....	.....	Large tree.....	Upper districts... Mobile.
No. 142.	Verbenacæ.....	Callicarpa Americana, L.....	.....	Climber.....	Common..... Mobile.
No. 143.	Oleacæ.....	Olea Americana, L.....	.....	Shrub.....	Common..... Mobile.
No. 144.	"	Chionanthus Virginica, L.....	.....	Small tree.....	Coast..... Mobile.
No. 145.	"	Fraxinus platycarpa, Mx.....	.....	Small tree.....	Lower to north... Mobile.
No. 146.	"	Fraxinus Americana, L.....	.....	Small tree.....	Lower..... Mobile.
No. 147.	"	Fraxinus quadrangulata.....	.....	Large tree.....	Lower to north... Mobile.
No. 148.	"	Fraxinus pubescens, Lam.....	.....	Large tree.....	Lower to north... Mobile.
No. 149.	Polygonacæ.....	Brunnichia cirrhosa.....	.....	Large tree.....	Lower to north... Mobile.
No. 150.	Lauracæ.....	Persea Carolinensis, Nees.....	.....	Climber.....	Lower to north... Mobile.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER:	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 151.	Lauraceæ.	Sassafras officinale, Nees.....	Sassafras.....	Common.....	Clarke.
No. 152.	"	Lindera Benzoin, Meis.....	Northern Spicewood...		North Alabama.
No. 153.	"	Tetr'nthera geniculata, Nees	Pond spice.....		
No. 154.	Thymeleaceæ.	Dirca palustris, L.....	Leatherwood.....	Shrub.....	Upper district....
No. 155.	Empetraceæ.	Ceratiola ericoides, Mx.....		Evergreen shrub.....	Lower to north... Clarke.
No. 156.	Urticaceæ.....	Ulmus Americana, L.....	Red Elm.....	Large tree.....	Coast... Mobile.
No. 157.	"	Ulmus fulva, Mx.....	Slippery Elm.....	Tree.....	Central to north... Gleburke.
No. 158.	"	Ulmus alata, Mx.....	Wahoo.....	Small tree.....	Lower to north... Clarke.
No. 159.	"	Plainera aquatica, Gmel.....	Planer tree.....	Small tree.....	Lower to upper... Mobile.
No. 160.	"	Celtis occidentalis, L.....	Hackberry, Nettle tree.....	Small tree.....	Central to upper... Montgomery.
No. 161.	"	Celtis Mississippensis, Bosc		Large tree.....	Lower to north... Clarke.
No. 162.	"	Morus rubra, L.....	Mulberry.....	Small tree.....	Coast Mobile.
No. 163.	"	<i>Broussonetia papyrifera</i> , Vent.....		Small tree.....	Upper districts...
No. 164.	"	<i>Maclura aurantiaca</i> , Nutt.....	Paper Mulberry.....	Tree.....	Native of E. Asia Mobile.
No. 165.	Platanaceæ..	Platanus occidentalis, L.....	Osage Orange.....	Small tree.....	Intr. from Ark.. Mobile.
No. 166.	Juglandaceæ.	Carya alba, Nutt.....	Sycamore.....	Large tree.....	Common.....
No. 167.	"	Carya tomentosa, Nutt.....	Shellbark Hickory.....	Large tree.....	Mobile.
No. 168.	"	Carya olivæformis, Nutt. ...	Pecan nut.....	Large tree.....	Lower to north... Mobile.
No. 169.	"	Juglans nigra, L.....	Black walnut.....	Large tree.....	Cen. & upper dis.
No. 170.	"	Juglans cinerea, L.....	Butternut.. ..	Large tree.....	Lower to upper... Clarke.
No. 171.	Cupuliferae...	Quercus, Oak.....		Large tree.....	Lower to upper... Clarke.
<i>White Oaks.</i>					
No. 172.	"	Quercus alba.....	White Oak.....	Large tree.....	Central to north... Tallapoosa.
No. 173.	"	Quercus obtusiloba, Mx.....	Post Oak.....	Small tree.....	Coast to upper... Mobile.
No. 174.	"	Quercus lyrata, Walt.....	Overcup Oak.....	Large tree.....	Lower to upper... Clarke.
<i>Chestnut Oaks.</i>					
No. 175.	"	Quercus Prinus.....	Swamp Chestnut Oak...	Large tree.....	Central to upper... Tallapoosa.
No. 176.	"	Quercus Prinus, var. monticola, Mx.....			
No. 177.	"	Quercus prinoides.....	Rock Chestnut Oak....	Large tree.....	Central to upper... Tallapoosa.
			Chincapin Oak.....	Small shrub.....	Upper districts...

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
		<i>Live Oaks.</i>			
No. 178.	Cupulifere..	Quercus virens, L.....	Live Oak.....	Coast.....	Mobile.
No. 179.	"	Quercus virens, var. maritima	Dwarf Live Oak.....	Lower.....	Mobile.
No. 180.	"	Quercus cinerea, Mich.....	Upland Live Oak.....	Lower.....	Mobile.
No. 181.	"	Quercus Phellos, L.....	Willow Oak.....	Lower to central..	Mobile.
No. 182.	"	Quercus Phellos, var. arena- ria.....	Sand Willow Oak.....	Coast.....	Mobile.
No. 183.	"	Quercus aquatica, Cates.....	Water Oak.....	Lower to central..	Mobile.
		<i>Black and Red Oaks.</i>			
No. 184.	"	Quercus nigra, L.....	Black Jack.....	Lower to north....	Mobile.
No. 185.	"	Quercus falcata, Mx.....	Spanish Oak.....	Lower to upper....	Mobile.
No. 186.	"	Quercus coccinea, Wang.....	Scarlet Oak.....	Central to upper..	Randolph.
No. 187.	"	Quercus tinctoria, Bart.....	Bl'ck or yel'w bark oak	Central to north..	Tallapoosa.
No. 188.	"	Quercus rubra, L.....	Red Oak.....	Upper to north....	Tallapoosa.
No. 189.	"	Quercus Catesbei, Mx.....	Turkey or Barren Oak.	Lower.....	Mobile.
No. 190.	"	Corylus Americana, Walt.....	Hazlenut.....	Upper district....	Clay.
No. 191.	"	Ostrya Virginica, Willd.....	Hope Hornbeam.....	Lower to north....	Clarke.
No. 192.	"	Carpinus Americana, Mx.....	Iron wood.....	Coast to north....	Mobile.
No. 193.	"	Fagus ferruginea, Ait.....	Beech.....	Coast to north....	Mobile.
No. 194.	"	Castanea vesca, L.....	Chestnut.....	Mounts, to north..	Cleburne.
No. 195.	"	Castanea pumila, Mx.....	Shrub, or small tree.....	Lower to upper....	Mobile.
No. 196.	Myricaceæ..	Myrica cerifera, J.....	Bayberry, Waxmyrtle.	Coast.....	Mobile.
No. 197.	"	Myrica inodora, Bart.....	Smooth Waxmyrtle....	Coast.....	Mobile.
No. 198.	Betulaceæ..	Betula nigra, L.....	Red birch.....	Central to north..	Tallapoosa.
No. 199.	"	Alnus serrulata, Ait.....	Smooth Alder.....	Coast to north....	Mobile.
No. 200.	Salicaceæ..	Salix nigra, M.....	Black Willow.....	Coast to north....	Mobile.
No. 201.	"	Populus angulata, Ait.....	Cot'n tree, Water popl'r	Coast to north....	Mobile.
No. 202.	"	Populus monilifera, Ait.....	Cotton tree.....	Lower to north....	Clarke.
No. 203.	Conifere....	Pinus australis.....	L'g le'v'd or yel'w pine	Coast to central..	Mobile.
No. 204.	"	Pinus mitis, Mx.....	Short leaved pine.....	Lower to central..	Tallapoosa.

LIST OF FOREST TREES AND SHRUBS FOUND IN ALABAMA.—CONTINUED.

NATURAL ORDER.	BOTANICAL NAME.	ENGLISH NAME.	HABITUS.	DISTRIBUTION.	COUNTY.
No. 205.	"	Pinus serotina, Mx.....	Large tree.....	Coast.....	Mobile.
No. 206.	Coniferae.....	Pinus Elliottii.....	Old field pine.....	Coast.....	Mobile.
No. 207.	"	Pinus inops, Ait.....	Scrub pine.....	Coast.....	Mobile.
No. 208.	"	Juniperus Virginiana, L....	Red cedar.....	Lower to north...	Mobile.
No. 209.	"	Cupressus thyoides, L.....	Juniper.....	Small tree.....	North Alabama.
No. 210.	"	Taxodium distichum, Rich.	Cypress.....	Coast to upper.....	Mobile.
No. 211.	Palmæ.....	Sabal Adansonii, Guer.....	Palmetto.....	Coast to central...	Mobile.
No. 212.	"	Sabal serrulata, R. & S.....	Saw Palmetto.....	Coast.....	Mobile.
No. 213.	Smilacæe.....	Smilax Walteri, Pursh.....	Green Brier.....	Lower.....	Mobile.
No. 214.	"	Smilax Pseudo-China, L....	False china root.....	Lower to north...	Mobile.
No. 215.	"	Smilax glauca, Walt.....	False Sarsaparilla.....	Lower to north...	Mobile.
No. 216.	"	Smilax laurifolia, L.....	Smooth Brier.....	Lower to north...	Mobile.
No. 217.	"	Smilax lanceolata, L.....	Climber.....	Coast.....	Mobile.
No. 218.	"	Smilax tannoides, L.....	Climber.....	Coast to north.....	Mobile.
No. 219.	"	Smilax pumila, Walt.....	Small shrub.....	Coast.....	Mobile.
No. 220.	Euphorbiaceæ.	Stillingia ligustrina, Mx....	Shrub.....	Lower to central.	Mobile.
		<i>Stillingia sebifera</i> , Mx.....	Small tree.....	Native of China	Mobile.

Part Twelfth.

*The Grasses, and other Forage Plants of Alabama—Indigenous,
Naturalized, and Cultivated.**

BY

CHARLES MOHR, MOBILE, ALABAMA.

The great grazing capabilities of the richer lands in the interior of this State, are fully established and appreciated. A less favorable opinion in that respect prevails regarding its Southern portion, where stock raising, and the methodic manufacture of the products of the dairy have been deemed not successful. In the light of the experiences of late years, such ideas are rapidly disappearing, and the attention of the farmer in the lower region is now earnestly directed to this fundamental basis of his enduring prosperity. If we miss here the meadow in the strict sense of the word, which forms such a striking feature in the system of agriculture, carried on in Northern latitudes, the South has in its spontaneous grasses, and in several cultivated species from the warmer regions of the Old World, resources of the same kind, in no respect inferior. Considering that many of these plants arrive at their maturity at a much earlier part of the season, making room for successive crops, that others continue to vegetate for several months longer, under the influences of a prolonged warm season, permitting of repeated cuttings, while some grow during a great part of the winter months, the production of fat and flesh producing materials, in the shape of green forage, hay, and in the pasture, must, by equal care and attention, reach here, larger proportions than in higher latitudes, where, for nearly one half the year, this work, in the great laboratory of nature, in consequence of earlier and later frosts, is stopped.

All doubts about these capabilities, even of the sub-tropical belt, and the lighter sandy soils throughout the pine region, will be dispelled by the sight of the rich verdure of a Bermuda grass pasture, or the waving fields of crab grass covering the ground after the removal of the corn, or earlier root crops, producing

* Written expressly for this HAND-BOOK.

with but little extra expense for moderate fertilizing, rich feeding grounds, and tons of sweet odorous hay of the highest quality. If many of the most valuable gregarious meadow grasses of the North do not thrive with us under the influences of longer summers, and perhaps a drier atmosphere, our farmers find in the culture of the larger but not less palatable and nutritious grasses introduced from the warmer zones, ample substitutes. The experiments made in these respects have lead to highly encouraging results, of which the intelligent husbandman, with every year, is more availing himself. Of these, having come only of late years into use, I will mention the following:

Panicum jumentorum, Guinea grass, a native of Africa, most extensively cultivated throughout the tropics. It is planted with us in the beginning of April; admits the first cutting during the last week of May; it makes very large bunches, and is to be cut before extending to the height of about 18 inches. In that stage it is very sweet, tender, and easily cured as hay. In moderately fertilized land and favorable seasons, it can be cut every 5 or 6 weeks, yielding by its throwing out numerous stolons, (stools) increased crops, until killed down by frost. The roots are easily protected during the winter, by a good covering with ground, like the ratoons of sugar cane, and allowing of a manifold division afford the best means of propagation. These root cuttings are set out in March or the beginning of April. Similar in habit, and affording crops of the same nature, is the

Sorghum hallepense, improperly also called Guinea grass. It is a perennial, and where it has taken hold with its large, fleshy, creeping root stocks, is hard to get rid of. Extensive trials with this grass have been made in this State, where it is called Johnson grass, and it has proven to yield crops of great abundance, as it can be mowed about a half dozen times during the season.

Pennisetaria spicata, the cat tail millet, also of African derivation, has been successfully cultivated throughout this State. It yields large crops when well manured, and affords as many cuttings, of a rich forage, but its curing is much more difficult, consequently, as a hay crop, it will be dismissed for the Guinea grass.

Setaria Italica, the millet or Bengal grass, with large nodding compound spikes, and *Setaria Germanica*, a smaller form of it, cultivated as Hungarian grass, with smaller, slender, mostly purple spikes, frequently cultivated and easily cured; yielding early in the season heavy crops of good hay.

The number of native grasses in the State is large, embracing

certainly half of the number of species indigenous to the Eastern United States. I have observed and collected in Southern and Central Alabama 132 species, belonging to 53 genera, including those few derived from other parts of the world which have gained a firm foothold in our flora, propagating their kind spontaneously. Of course these grasses differ much in value: many are entirely worthless, others of more or less value, if compared with those of the highest merits on account of their richness in life-sustaining and blood or fat-producing qualities. Scientifically, it has never been demonstrated which, in that regard, are to be placed at the head of the list, as no analyses of any of them have been made. It is indeed a most meritorious work in which, at present, the Department of Agriculture, in Washington, is engaged in instituting a line of analytical researches at its laboratories to supply this greatly desired information. Samples of the grasses from this section, deemed the most important on account of their frequency, distribution, and habit, have been, by request, forwarded to the Department to be analyzed. In the following lines the grasses considered as more or less valuable are mentioned to attract the attention of those interested, which, by a mere mention of names in the catalogue, can not be achieved.

Hydrochloa Carolinensis, Bauv. A soft, tender, short grass, creeping on the muddy banks of the creeks in the pine woods, floating in patches in their more gently flowing waters. It is perennial, and vegetates all winter, when it is particularly sought for by cattle.

Alopecurus pratensis, L. and *A. geniculatus*, L., the meadow foxtails of Europe where they are esteemed as valuable meadow grasses, are sparsely naturalized with us.

Agrostis alba, B. Fiorine or white bent grass, naturalized from Europe, is frequent in low fields and cultivated grounds. It is perennial and the densely tufted stems surrounded by the long, narrow tender leaves, bear spreading panicles of pale flowers. It will stand our summers well and prove for this section what the red top is for the North.

Muehlenbergia Mexicana, Tr., and *M. diffusa*, are perennial, more or less decumbent grasses, with slender stems and short, narrow, soft leaves, growing in damp woods and thickets, and are much liked by cattle and horses.

Cynodon Dactylon., Per. Bermuda grass, perhaps introduced, widespread over the maritime regions, thriving in the arid barren driftsands on the seashore, covering them by its long creeping stems, whose deeply penetrating roots impart firmness to a soil

which else would ever remain devoid of vegetation. It is esteemed as one of the most valuable of our grasses either in the pasture or cured as hay. As there has been much written about its merits they need here no further mention.

Leptochloa mucronata, Kunth., annual, two to three feet high, with broad, somewhat hairy leaves; the small flowers are borne in numerous slender spikes almost horizontally attached to the main stem, forming an elongated raceme; abundant in cultivated grounds; a soft, good grass.

Eatonia obtusata and *mucronata*. Vernal, perennial, slender grasses, growing in small tufts in dry grounds, on roadsides, borders of woods, etc.

Arundinaria gigantea: Cane: The largest of our grasses, reaching the dimensions of a small tree; in some respects one of the most important of our truly native grasses. It covers along the low borders of our rivers large tracts, called cane-breaks, as well as the rich forest swamps bordering upon them in the low country, affording throughout all seasons of the year an abundance of highly nutritious food.

Arundinaria tecta: Smaller cane; reed; does not attain the dimensions of the last; ripens its farinaceous, large, early dropping seeds in February and March; after that, thriving new branches covered with a very rich foliage of the richest verdure; prefers the better soils not subject to inundation, and forms the esteemed range of the so-called hammock lands; fire destroys it rapidly.

Festuca unioides: Drooping fescue. A slender, perennial, growing in the more central districts, from where it was sent to me for determination by parties who speak highly of it.

Uniola latifolia: A fine perennial two to three feet, with long, flat leaves, bearing the flat spikelets on slender drooping stalks in a loose panicle; is frequent towards the centre of the State, growing in large tufts, and judging from its foliage a grass of good quality.

Bromus Schraderi: Only of late years found spreading in different parts of the State; annual; makes its appearance in February; grows in tufts, its numerous leafy stems growing from two to three feet high; ripens the seed in May; affords in the earlier months of spring a much relished nutritious food, as well as a good hay.

Holcus lanatus: Velvet grass: This of late has attracted some attention, fully merited, as it grows with great rapidity during the early spring season, and is ready for mowing in the beginning of

May; affords large crops of fine, sweet hay; fields with ^{as} crops of this grass raised near Mobile, present ⁱⁿ a splendid, luxuriant appearance; is worth a place in the front of our pasture or hay grasses; has been absurdly called Mesquite grass and said to come from Texas; is a native of Europe and there regarded as a valuable perennial meadow grass.

Arrhenatherum avenaceum: Oat grass: A fine perennial, much of the aspect of oats, with a stem two to three feet in height, with broadly linear leaves. Samples received this season from Mississippi, taken from lots cut for hay, present the appearance of a thrifty, luxuriant, largely yielding hay grass, well adapted for our soils and climate.

Phalaris intermedia: An annual native, peculiar to the lower region of the South; its tall, somewhat stout stems, bear broad leaves and flowers in a dense cylindric terminal spike, two to four inches long, and from one-half to three-fourths of an inch thick, resembling the heads of timothy. It is asserted that stock of all kinds is very fond of it, either green, or cured as hay; is common along our seashore in gravelly soils intermixed with some vegetable mould.

Panicum (Digitaria) sanguinale: Crab grass: This annual, thoroughly naturalized from Europe, is too well known to need further description here, and its merits as one of the chief hay crops of the South, in regard to quality and quantity, are sufficiently appreciated by all interested, to be spoken of any further, here.

Panicum (Digitaria) filiformis: Is the native form of crab grass: Is common in the coast region of the Atlantic slope and the Gulf: Its stem is erect, bearing its florets in erect, slender spikes: Very common, but hard and dry, and not much relished by cattle.

The *Panics* proper, are represented in our flora by a great number of species, forming a large part of our gramineous vegetation: They are mostly perennials, growing in the most different soils, and some of the gregarious species covering large tracts of ground, are a prominent feature of our range: In the young and tender state, all afford, more or less, valuable nutriment: The larger species, with but few exceptions, soon get harsh and dry, and arrived at maturity, are mostly unpalatable; the genus (*Panicum*) is known by its nearly globose spikelets bearing one perfect floret: The more or less slender flower stalks are disposed in panicles, on the main stem: Seeds are all mealy and nutritious, and the smaller, more delicate species, are, on

that account, even when dry, not without value : Some of the most valuable grasses imported from the tropics of the Old World, and cultivated in the warmer zones of this continent, belong to this genus : One of our native species rivalling these in sweetness and nutritious qualities, in my opinion, is the

Panicum proliferum, a large succulent, annual grass, putting forth its numerous tender branches throughout the latter part of the summer ; it grows 3 to 4 feet or more in height, stands cutting well, and cattle and horses are very fond of it.

Panicum Grus Galli : Also an annual, 2 to 3 feet high, bearing its hispidly awned flowers, in dense one-sided panicles, composed of numerous crowded spikes ; is found growing luxuriantly, particularly in the low lands of the coast ; is greedily eaten by horses and cattle, and makes fine hay of good quality.

Andropogon Scoparius : Broomsedge : One of our most common grasses, covering old fields, fencerows, and extensively growing in the dry sandy soils of the pine woods : Much despised as this grass is as a troublesome, unsightly weed, it has its good qualities, which entitle it to a more charitable consideration : In the dry pine woods, it contributes while green and tender, a large share to the sustenance of the stock : From a statement in the Report of the Department of Agriculture, (1874), I perceive that in the great plains of the West, it is regarded as one of the very best of the forage resources of that great grazing country. East of the Mississippi, it has always been looked upon as worthless.

Of native forage plants belonging to other natural families, we possess a few valuable *Leguminosæ*, plants of the pea tribe, particularly of the genus *Desmodium*.

Desmodium acuminatum, and *D. nudiflorum*, common all over the States east of the Mississippi, and much esteemed as nutritious, milk-producing plants, are frequent in rich, shady woods through this State. Other species, peculiar to its southern section, are said to be valuable, and are even cultivated in Florida, but they are more or less hard and dry, the stiff stems but scantily clothed with leaves. The *Desmodiums* are known under the name of *Tick trifol*, or tick-seeds, from the flat-jointed hispid seedpots that attach themselves to the hair and fleece of animals and the clothing.

The *Lespedeza striata*, Japanese Clover, belongs to this family ; introduced from Eastern Asia, it has, during the last decade, overspread the Southern States from the Atlantic shores to the banks of the Mississippi. Cattle and horses are eating it. Of its value

as a nutritive food, I can not speak. The analysis to be soon expected from the National Department of Agriculture will soon decide upon its merits.

Several species of Vetches or tares, *Vicia*, deserve attention. The European tare, *Vicia sativa*, is almost naturalized in many parts of this State, thriving luxuriantly; its rich flowering vines reach three to four feet in height, early in April on the coast; much cultivated in Europe as a favorite green crop for milk cows; is entitled to more attention from our dairy men than it has received.

Along the seaboard of this State, the so-called *Mexican* clover, *Richardsonia scabra*, is found spreading extensively; it covers the sandy upland soils completely with its succulent prostrate leafy stems bearing the small white funnel-form flowers, in terminal heads, and whorls in the axils of the leaves. In regard to its nutritive value, it is scarcely inferior to clover; horses, cattle and sheep are fond of it, particularly of the hay. A detailed account, with an analysis of the plant by the Department, is found in the Report of 1874. As a green manure, it is of the greatest benefit to the farmer in the lower pine region.

Very valuable as affording rich, nutritious pasture ground, in the earliest parts of spring, is the *Spurge*, or *Spergula arvensis*, a low annual with prostrate diffuse, succulent, jointed stems, bearing whorls of small, narrow, linear leaves, and the small, greenish white flowers attached to slender stalks. This plant seeds abundantly in April; with the appearance of the warm seasons it dries up and disappears completely, re-appearing during the sunny days in the latter part of the winter, and not liable to be after that injured by frost; is held in high repute in the low countries of Western Europe by the dairy men, and the butter produced from the milk of cows feeding on this earliest of all pasture plants enjoys a particular reputation for its fine flavor as Spurge butter.

LIST OF GRASSES FOUND IN ALABAMA.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.*	DURATION.
1.	<i>Leersia oryzoides</i> Swartz†...	False Rice.....	Low, marshy banks.....	Montgomery..	Perennial.....
2.	" <i>Virginica</i> , Willd.....	" ".....	" ".....	Mobile.....	" ".....
3.	<i>Zizania aquatica</i> , L.....	Wild Rice.....	Deep marshes.....	" ".....	" ".....
4.	" <i>miliacea</i> , Mx.....	" ".....	" ".....	" ".....	" ".....
5.	<i>Hydrochloa Carolinensis</i> , Beauv.....	Floating Grass.....	Muddy banks and shallow streams.....	Mobile.....	Perennial.....
6.	<i>Alopecurus geniculatus</i> L.....	Meadow fox tail.....	Cultivated grounds.....	" ".....	" ".....
7.	" <i>pratensis</i> , L.....	" ".....	" " rare.....	" ".....	" ".....
8.	<i>Phleum Pratense</i> , L.....	Timothy.....	" ".....	" ".....	" ".....
9.	<i>Sporobolus junceus</i> , Kth.....	Wire grass.....	Dry pine barrens.....	" ".....	" ".....
10.	" <i>Indicus</i> , Br.....	Smut grass.....	Waste places.....	" ".....	" ".....
11.	<i>Vilfa aspera</i> , Beauv.....	" ".....	Dry sterile soils.....	" ".....	" ".....
12.	" <i>vaginæflora</i> , Tor.....	" ".....	" ".....	" ".....	" ".....
13.	<i>Agrostis scabra</i> , Willd.....	Rough bent grass.....	Sandy soil.....	" ".....	" ".....
14.	" <i>arachnoides</i> , Ell.....	Spider bent grass.....	Dry soil on the coast.....	" ".....	" ".....
15.	" <i>Alba</i> , L.....	Eng. or white bent.....	Damp cultivated places.....	" ".....	" ".....
16.	<i>Cinna arundinacea</i> , L.....	Sweet reed.....	Rich woods.....	Montgomery..	" ".....
17.	<i>Muhlenbergia</i> or <i>diffusa</i> , Sw.....	Dropseed grass.....	Low damp thickets.....	Mobile.....	" ".....
18.	" <i>Mexicana</i> , Trin.....	" ".....	" ".....	" ".....	" ".....
19.	" <i>capillaris</i> , Kth.....	Seaside hair grass.....	Sandy soil, coast.....	" ".....	Worthless,
20.	" <i>trichopodes</i> , Ch.....	Bunch hair grass.....	Dry pine woods.....	" ".....	" ".....
21.	<i>Brachelytrium aristatum</i> , B.....	" ".....	Dry woods.....	Montgomery..	" ".....
22.	<i>Stipa avenacea</i> , L.....	Feather grass.....	" pastures.....	" ".....	" ".....
23.	<i>Aristida lanata</i> , Poir.....	Poverty grass.....	Dry, sandy soils.....	Mobile.....	" ".....
24.	" <i>purpurascens</i> , Poir.....	Beard grass.....	" ".....	" ".....	" ".....
25.	" <i>virgata</i> , Trin.....	" ".....	" ".....	" ".....	" ".....
26.	" <i>stricta</i> , Mx.....	" ".....	" ".....	" ".....	" ".....
27.	" <i>spiciformis</i> , Ell.....	" ".....	Low, wet, pine barrens.....	" ".....	" ".....
28.	<i>Spartina juncea</i> , Willd.....	Marsh grass.....	Brackish marshes, coast.....	" ".....	" ".....
29.	" <i>glabra</i> , Muhl.....	" ".....	" ".....	" ".....	" ".....
30.	" <i>polystachya</i> , Willd.....	" ".....	" ".....	" ".....	" ".....

*This Heading is intended to designate the Counties in which the specimens were collected by the writer.

†The names, initials, and abbreviations of names immediately to the right of the Botanical names, indicate the authors of the plant names.

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.	
31.	<i>Gymnopogon racemosus</i> , Bv...		Dry pine woods	Mobile	Perennial	Worthless.
32.	<i>Eustachys petraea</i> , D.	Seaside finger grass.	Damp soil, near the coast.	"	"	"
33.	<i>Cynodon Dactylon</i> , Pers.	Bermuda grass.	Near the coast.	"	"	Highly val'ble
34.	<i>Ctenium Americanum</i> , Spr.	Toothache grass.	Low pine barrens.	"	"	Worthless.
35.	<i>Dactyloctenium Aegyptiacum</i> .	Crowfoot grass.	Cultivated ground.	Montgomery.	"	Little value.
36.	<i>Eleusine Indica</i> , Gar.	Yard grass	"	"	"	"
37.	<i>Leptochloa mucronata</i> , K.		Fields and gardens.	Mobile	"	Valuable.
38.	" <i>polystachya</i> , K.		Branches and swamps.	"	"	Worthless.
39.	<i>Tricuspis sesleroides</i> , Torr.		Dry soils.	"	"	Little value.
40.	" <i>ambigua</i> , Chap.		Damp soils.	"	"	"
41.	<i>Triplesis Americana</i> , Beauv.		Dry sandy, pine woods.	"	"	Worthless.
42.	" <i>purpurea</i> , Gr.	Sand grass.	Drifting sand, sea coast.	"	"	"
43.	<i>Eatonia obtusata</i> ,		Dry and cultivated soil.	"	"	Some value.
44.	" <i>Pennsylvanica</i> , Gr.		Dry pine woods.	"	"	Valueless.
45.	<i>Melica mutica</i> , W.	Melic grass.	Shady wood.	"	"	Some value.
46.	<i>Glyceria nervata</i> , Trin.	Manna Grass.	Low, grassy woods.	Montgomery.	"	Valuable.
47.	<i>Arundinaria gigantea</i> , Chap.	Cane.	Low, marshy, rich river b'k.	Mobile.	"	Highly val'ble
48.	" <i>tecta</i> , Muhl.		Low, rich woods.	"	"	"
49.	<i>Brizopyrum spicatum</i> , Hook.		Salt marshes, seashore.	"	"	Worthless.
50.	<i>Poa annua</i> , L.	Low spear grass.	Cultivated grounds.	"	Annual.	Some value.
51.	" <i>compressa</i> , L.		Sterile clay soils.	Montgomery.	Perennial	No value.
52.	" <i>pratensis</i> , L.		Rich calcareous soils.	Upper count'y	"	Valuable.
53.	" <i>flexuosa</i> , Muhl.	Blue grass.	Rich woods.	Montgomery.	"	"
54.	<i>Eragrostis reptans</i> , Nees.		Low, sandy river banks.	Tallapoosa.	"	No value.
55.	" <i>megastachya</i> , Gr.		Cultivated grounds.	Mobile.	Annual.	Worthless.
56.	" <i>ciliaris</i> , L.		Waste places.	"	"	"
57.	" <i>Purshii</i> , Schrad.		Sandy, dry soil.	"	"	"
58.	" <i>conferta</i> , Trin.		Moist banks and fields.	"	"	Some value.
59.	" <i>tenuis</i> , Gr.		Dry woods and banks.	"	Perennial.	"
60.	" <i>nitida</i> , Chap.		Sandy seashore.	"	"	"
61.	" <i>pectinacea</i> , Gr.		Dry soil, common.	"	"	Valuable.
62.	<i>Festuca Myurus</i> , L.	Small Fescue grass.	Dry soil, common	Montgomery.	Annual.	Worthless.

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
63.	<i>Festuca parviflora</i> , Ell.	Small Fescue grass.	Dry soil, common	Mobile	Annual
64.	" <i>tenella</i> , Willd.	"	Dry soil, common	"	"
65.	" <i>unifoloides</i> , Willd.	"	Woods	Montgomery	"
66.	<i>Bromus ciliatus</i> , L.	"	Moist, shaded banks	Central Ala.	"
67.	<i>Bromus Schraderi</i> , Lk.	"	Cultivated ground	Mobile	"
68.	<i>Uniola latifolia</i> , Mx.	"	Shaded woods	Montgomery	Perennial
69.	" <i>gracilis</i> , Rich.	"	Low banks and woods	Mobile	"
70.	" <i>paniculata</i> , L.	Sea oats	Drifting sands, seashore	"	"
71.	" <i>nitida</i>	"	Low, shaded banks	"	"
72.	<i>Phragmites communis</i> , Trin.	Reed	Marshes	"	"
73.	<i>Elymus Virginicus</i> , L.	Wild rye	Low rich banks	"	"
74.	<i>Gymnostichum Hystrix</i>	Lyme grass	Woods and fields	"	"
75.	<i>Hordeum</i>	Wild barley	Waste places	"	Annual
76.	<i>Danthonia sericea</i> , Nutt.	"	Dry pine woods	"	"
77.	" <i>spicata</i> , Beauv.	"	Barren soil	North Ala.	"
78.	<i>Arrhenatherum avennaceum</i> , B.	Tall oatgrass	Cultivated ground	Mobile	"
79.	<i>Avena fatua</i> , L.	Sand oats, wild oats	Waste places	"	"
80.	<i>Phalaris intermedia</i> , Bose.	Wild canary grass	Damp places	"	"
81.	<i>Aira caryophylllea</i> , L.	"	Grassy banks	"	"
82.	<i>Holcus lanatus</i> , L.	Soft meadow grass	Cultivated ground	"	Perennial
83.	<i>Paspalum fluitans</i> , Kth.	"	Ditches and ponds	Montgomery	"
84.	" <i>distichum</i> L.	"	"	Mobile	"
85.	" <i>præcox</i> , Walt.	"	Borders of swamps	"	"
86.	" <i>læve</i> , Mx.	"	Sandy soil	"	"
87.	" <i>racemosum</i> , Nutt.	"	"	"	"
88.	" <i>Floridanum</i> , Ma.	"	Dry soil	"	"
89.	" <i>ciliatifolium</i> , Mx.	"	Dry, sandy soil, common	"	"
90.	" <i>undulatum</i>	Bull grass	Cultivated fields near coast	"	"
91.	<i>Panicum sanguinale</i> , Lin.	Crab grass	"	"	Annual
92.	" <i>villosum</i>	Hoary crab grass	Damp pasturages, roadsides, common	Mobile	"
93.	" <i>Filiforme</i> , L.	Slender crab grass	Sandy dry soils	"	Annual

Some value,
Little value

Valuable,
Highly val'ble

Worthless,
Valuable,
Little value,
Worthless,

Valuable.

Some value,
Little value,
Worthless,

Worthless.

Valuable.

Worthless.

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
94.	<i>Panicum gibbum</i> , Ell.	Spiked panic grass.	Low, wet places.	Mobile.	Perennial.
95.	" <i>hians</i> , Ell.		"	"	"
96.	" <i>anceps</i> , Lin.		Dry soil.		"
97.	" <i>virgatum</i> , L.	Tall panic, switch cane.	Swamps.	"	"
98.	" <i>verrucosum</i> , L.		Low, damp woods.	"	"
99.	" <i>viscidum</i> , Ell.		On marshes and low banks.	"	"
100.	" <i>capillare</i> , L.		Dry fields.	Montgomery.	"
101.	" <i>amarum</i> , Ell.		Sandy seashore.	Mobile.	"
102.	" <i>scoparium</i> , L.		Margin of woods.	"	"
103.	" <i>microcarpon</i> , M.		Dry soil, common.	"	"
104.	" <i>dichotomum</i>		Low ground, common.	"	"
105.	" <i>depauperatum</i> , Ml.		Low, sandy fields.	"	"
106.	" <i>ignoratum</i> , Kth.		Dry pine woods.	"	"
107.	" <i>rufum</i> , Kth.		Damp pine woods.	"	"
108.	" <i>Walteri</i> , Ell.		Damp, shaded soils.	"	"
109.	" <i>Crus Galli</i> , L.		Damp, shaded soil, borders of branches and swamps, very luxuriant.	Annual.	Some value.
110.	<i>Setaria glauca</i> , Beauv.		Cultivated ground.	Mobile.	Very valuable
111.	" <i>glauca</i> , var. <i>laevigata</i> , Chap.			"	Some value.
112.	" <i>Italica</i> , Kth.	Millet.	Brackish swamps.	Mobile.	Some value.
113.	" <i>Germanica</i>	German millet.	Deep river marshes and cultivated soil.	Mobile.	Valuable.
114.	<i>Cenchrus echinatus</i>	Burr grass.	Introduced.	"	"
115.	" <i>tribuloides</i> L.	"	Fields and waste places.	"	Worthless.
116.	<i>Stenotaphrum Americanum</i> , S		Drifting sand, coast.	"	"
117.	<i>Rottboellia rugosa</i> , Nutt.		Damp, sandy coast.	"	"
118.	" <i>corrugata</i> , Bald.		Pine, barren swamps.	Perennial.	Little value.
119.	<i>Tripsacum dactyloides</i> , L.	Gama grass.	"	"	Valuable.
			Rich soil.	"	"

LIST OF GRASSES FOUND IN ALABAMA—CONTINUED.

No.	BOTANICAL NAME.	ENGLISH NAME.	STATION.	COUNTY.	DURATION.
120.	Andropogon tener, Kth....	Dry, close soils.....	Mobile.....	Perennial	Little value.
121.	Scoparius, Mx.....	Broom sedge.....	Dry woods and fields.....	"	Not esteemed, but perhaps of value.
122.	" Elliottii.	Broom sedge.....	Common dry places.....	Mobile.....	Perennial
123.	" Virginicus	"	"	"	Little value.
124.	" macrourus, Mx.....	Brook grass	Low fields.....	"	"
125.	" furcatus, Muhl....	Tall forked broom- sedge	"	"	"
126.	" melanocarpus, E.	"	Dry woods.....	Mobile.....	Perennial
127.	Erianthus alopecuroides, Ell..	Tall wool grass.....	Damp, shaded woods.....	Baldwin.....	Little value.
128.	" contortus	"	Ponds and borders swamps...	"	Worthless.
129.	Sorghum avenaceum, Ch.....	Indian grass.....	"	"	"
130.	" nutans, Gr.....	Wood grass.....	Dry sandy soil.	"	Little value.
			Pine woods.....	"	Valued West.

NOTE.—There is no doubt that in the northern part of the State other species of particularly Northern forms are to be found, which did not come to the notice of the writer.

Part Thirteenth.

The Agricultural Divisions, Capabilities, and Advantages of Alabama.

The consideration of the Geology, Soils, and Forage Plants of Alabama, in Parts Nine, Ten, and Twelve, respectively, necessarily involved a more or less general discussion of these subjects, and it only remains in this place to *particularize* as far as possible, and present such *statistics* of the agricultural productions of the State as may be accessible: and this will be found to be anything but an easy task, as Alabama has no Department charged with the duty of collecting such statistics.

Prof. Stubbs, especially, has shown in Part Ten, from a *scientific* standpoint, the various soils of the State, their elements, and for what crops mainly adapted: hence it will be unnecessary to recur here to any of the topics discussed in his paper.

Not to go over the ground covered by him and others, it may, however, be stated in this connection that in an *ordinary* agricultural point of view, the divisions of Alabama are three fold, viz: 1st, the Pine Belt; 2d, the *Black*, or Cotton Belt; 3d, the Red and Grey Lands of the Northern, Central-Eastern, and North-Eastern portions of the State. These divisions are quite plainly defined, and it is proposed to treat of them in the order in which they have been mentioned.

1st. **The Pine Belt.** A straight line drawn across the State from east to west, along the thirty-first parallel of latitude, to the eastern boundary of Baldwin county, and then bending southward so as to include the lower portions of the counties of Baldwin and Mobile; and another, but irregular line, about sixty miles further to the north, also running across the State from east to west, and passing through or near the towns of Louisville, Troy, Greenville, Camden, and Nanafalia, would mark, approximately, the boundaries of this, first, division. It includes the whole tier of the lower counties of the State, and has an area of about 12,500 square miles—or one-fourth of the State—and 8,000,000 acres. This region is covered throughout with a magnificent growth of long-leaved, or yellow pine, of immense economical value, which has been fully described by Dr. Mohr, in Part Eleven, and need not be further spoken of here.

The soils of this division are light, thin and sandy, as a rule; and, as yet, have no very great agricultural value. Still, there are many fertile localities in this section: notably in the richer counties of Butler, Monroe, Clarke, and Choctaw, which amply reward the husbandman for his labor.

These pine lands—thin though they be—are susceptible of great and comparatively easy and inexpensive improvement, and have of late years very much increased in value for market gardening purposes, and will continue to increase with advancing railroad facilities, and the demand for early vegetables for the Northern markets. Prof. Stubbs, one of the best informed chemists in the State, has, in Part Ten, fully demonstrated that the means of their enrichment lie immediately at hand, in the pine straw which falls annually, and the marls of this section which, with this straw, make an admirable and inexpensive compost.

From the nature of its soil, this pine region is peculiarly adapted to the root crops and the growing of vegetables. Sugar cane, which has entered extensively into its economy since the war, is grown here quite extensively, and its products rival, in quality, those of the famous Louisiana cane. The sweet potato may be said to arrive at perfection here—and its fine *yams* are celebrated, both for size and taste. No where does the watermelon do so well, except upon the equally as sandy soils of New Jersey. For size and flavor, the watermelons of this section are unsurpassed. The other melon crops do equally as well.

Nearly all the varieties of vegetables can be successfully cultivated upon these soils, and their yield in this respect never fails to excite surprise—producing far in excess of richer but stiffer, and less porous soils. To the experienced gardener, this region, wherever railroad facilities are at hand, presents an inviting field for the growing of early vegetables for Northern markets. Already, in the neighborhood of Mobile, this industry is assuming large proportions; and the shipments of green peas, beans, Irish potatoes, tomatoes, cabbages, etc., amounted in 1877 to \$44,000 in value, and it is estimated that in 1878 (the season just passed) they amounted to \$60,000. The lands around Mobile are identical with those throughout the rest of this section. Here, and elsewhere in this section, the season is from four to six weeks in advance of the season in higher latitudes; and there is a growing demand for these early vegetables—the producers finding no difficulty in disposing of their products. The railroads leaving Mobile, recognizing the importance to them as well as to the producers of this growing industry, extend to its development all the aid in their

power, and by reduced freight charges—which will decrease as shipments increase, and in a greater ratio—enable the producer to realize a fair profit.

The growing of early fruits for Northern markets is also a promising industry in this region, and the shipments of such show a large increase with each year. The peach—universally acknowledged to be one of the finest, if not *the* finest of orchard productions—is perfectly at home in Alabama, and no where more so than in this pine region. Here, with proper culture and attention, it reaches perfection. Here it ripens from one month to six weeks earlier than it does in the North and West; and early shipments find a ready and remunerative sale in those markets. The shipments of the earlier kinds commence the last week in May, and are continued, with the other varieties in succession, to the middle of July. As this industry grows, will come special fast freight trains, and greatly reduced freight charges, and this, now comparatively small industry, will assume very large proportions. To show the probable extent and value of this trade in the future, it may here be stated that the shipments of Capt. Isaac Donavan (a fruit grower of Mobile county, on the line of the Mobile and Ohio Railroad), alone, during the season of 1877, were 6,000 boxes of peaches, of one-third of a bushel each, on which he realized a net profit of more than \$5,000.*

Certain varieties of the pear also do well in this region with proper culture, and shipments of the early kinds to Northern markets pay well.

The strawberry grows finely and produces abundantly in this section, and early shipments make remunerative returns. The fig does well here, also; and there is no reason why, in time, this region should not become a large shipper of this delicious fruit in its dried state. The little *blue fig* of this section is unsurpassed for flavor. On the coast below Mobile very fine native oranges are produced. Many other fruits do well in this section; only those for which it is peculiarly adapted having been enumerated above. Cotton, corn, and oats also do reasonably well, with judicious manuring and cultivation. The forest growth of long-leaved, or yellow pine affords an abundance of superior and accessible lumber for fencing, house building, etc., while excellent fuel is abundant in the scrubby oak and other groves nearly everywhere interspersing this section. Dr. Mohr, in Parts Eleven and Twelve, respectively, has spoken fully of the excellent timber

* Hon. C. C. Langdon's address before the Blount Springs Industrial Convention, 1877.

and grasses of this region, and they need no further mention in this place. The roads are smooth and hard: excellent in winter and summer. Its water is abundant, pure, and wholesome; and the health of these high, dry, pine lands equal to that of any region in the world. The exhalations from its grand old forests of pine are life-giving, and a sure safeguard against those great destroyers—consumption and cholera; while that scourge of the tropics, yellow fever, was never known here outside of the populous cities. In the beneficent order of Nature—an order which does not give to any one section all the advantages, and to another all the disadvantages of life—it seems decreed that those locations the least fertile should be the most healthful, and those the richest the most wanting in this regard.

So genial is the climate of this Pine Belt, its summer heats tempered by the moist, sweet breezes of the Gulf, which continually blow over it during the heated term, and its winters moderated by the influence of that great river in the ocean—the warm Gulf Stream, that vegetation is almost perennial, and crop succeeds to crop with scarcely any intermission.

There are many thousand acres of these pine lands in the hands of the railroads and the United States government, for sale, which can be bought on long time, and at from one to five dollars an acre, according to location and improvement; while many acres are susceptible of entry, at nominal figures, under the Homestead and Pre-emption laws of the General Government.

2d. The Black or Cotton Belt. Called *black* from the dark appearance of its surface soil. The southern boundary of this division begins at the northern boundary of the pine region, and an irregular line drawn across the State from east to west, about 60 miles further north, and enclosing entirely or in part, the 17 counties of Barbour, Russell, Macon, Bullock, Elmore, Montgomery, Pike, Autauga, Lowndes, Perry, Dallas, Wilcox, Marengo, Hale, Greene, Sumter, and Pickens, would mark, approximately, the limits of this division, which has an average width of 60 miles and covers an area of, about, 10,000 square miles, and 6,500,000 acres.

This is the great cotton producing region of Alabama, and hence its name of *Cotton Belt*. It is, also, the best Indian corn producing section of the State—these two being its great staples.

As a rule, the soil of this Belt is a black prairie, of great fertility, and unsurpassed by any similar soil in the United States. That of the rich *Cane-brake* region, along the Alabama Central Railroad, in the counties of Dallas, Marengo, and Perry, had, by

its fertility, acquired a national reputation prior to the war. It was the lands of this Belt that, up to 1860, made Alabama the second cotton producing State in the Union—Mississippi ranking first. To illustrate the great productiveness of this region at that time, it is only necessary to say, that in 1860, of the total cotton crop of the United States—5,387,052 bales of 400 pounds each, Alabama produced 989,955 bales, or nearly one-fifth of the total number; and of these 989,955 bales, this *Black Belt* of 17 out of 66 counties composing the State, alone produced about 675,000. Its production of corn was, about, 15,000,000 bushels out of a total of 33,226,284 bushels produced in the State, in that year. It is a well established fact, that this rich result was achieved by a well ordered slave labor, tilling lands of great natural fertility and peculiarly adapted to these two crops.

But a great change was soon to come over this bright aspect of affairs. A civil war of four years duration succeeded to these prosperous times, desolating and impoverishing the whole South, and casting its blighting influences especially over those sections where the slaves predominated. The customs and habits of half a century suddenly gave place to a new and untried order of things, and a skillful, disciplined, slave labor to a demoralized and unreliable free. With his fences all down, fields grown up in sedge, stock gone, and gloom and distrust filling the land, the planter of this section essayed the difficult task of bringing order out of chaos, and regaining his former prosperity. It was while our planters were struggling under these disadvantages that the Federal Census of 1870 was taken, and it is no wonder that Alabama fell from her proud eminence as a great and opulent State, exceeded in the aggregate of agricultural values by only the States of New York, Pennsylvania, Illinois, and Mississippi, and was classed among the *poorest* of the States. Her cotton production in that year, amounted to 429,482 bales only, of which, this same *Black Belt* produced, about, 250,000 bales—a loss to the State, as compared with 1860, of 560,473, and, to this Belt, of 425,000 bales. By the same census, the production of corn in the State at large had decreased to 16,977,948 bushels, and in the *Black Belt* to 6,300,000; showing a loss in this respect of 16,248,334 to the State, and to this Belt of 8,700,000 bushels.

A careful study of the statistics of the Census of 1870, shows beyond all possibility of contradiction that this great loss was due to demoralized labor, and that the greatest falling off in agricultural values in the South, was in those districts where the *Slaves* largely predominated, and, as a consequence, the greatest

demoralization in labor existed. To still further corroborate the premises that to labor demoralization is attributable the great decline in agricultural values in the South, it may be stated that the Census of 1870 shows the falling off in the principal slave holding States was in a greater ratio than the falling off in the South at large.

Having clearly ascertained the cause of this great decline in agriculture in the South, it is easy to apply the remedy—*better labor*. Notwithstanding there is growing up a better understanding between the colored laborer and his white employer, and each is adapting himself to the new order of things; that mutual confidence is being gradually engendered, and the colored man has come to know that emancipation does not mean total immunity from labor, notwithstanding the once opulent planter has learned how sweet are the uses of adversity, and been taught valuable lessons by bitter experience, notwithstanding all these things, the great want of this section remains—*better labor*, which can only be supplied by intelligent white settlers, who know how and are not afraid to work. This want may be slowly supplied, but in time it will be supplied, and then a new era will dawn upon this section. Revolutions progress slowly, but they progress for all that. Disease works rapidly, whilst the work of recuperation is tedious, and the burning fever of a single day, may require months of convalescence.

Many crops besides cotton and corn are successfully grown on these *Black* lands, such as wheat, rye, oats, tobacco, potatoes, barley, buck-wheat, sugar cane, millet, and many of the grasses; but cotton and corn are the two great staples. The peach, also, does well in this section, and fine vegetables are grown here. Good pasturage is to be found in very many localities in this region, and stock raising and sheep husbandry will be found profitable. Timber is not so abundant as in the other sections of the State—still the supply is sufficient for all domestic purposes, for fence building, house building, and fire wood. The roads in summer are hard and smooth, but in winter, heavy. As a rule, water is scarce, and must be caught in cisterns, or obtained from artesian, or *bored* wells, penetrating the underlying strata of sand. The soil is heavier and more difficult of cultivation than the soils of the other sections of the State, but when properly tilled make up for it in larger returns. The one great and peculiar feature of the staple, cotton, is, that it is *ready money*—money in all the markets of the world, and as easily convertible at the planter's gin-house as in the emporium; sought after, and not compelled to

seek a purchaser. This can hardly be said of a single other crop. The health of this region is as good as the health of rich lands usually is, and the only diseases incident to it are those super-induced by malaria—a cause which will rapidly disappear with better drainage and more attention to sanitary laws.

As in the Pine Belt, so in this, there are many thousands of acres of land for sale, which can be bought on long time, and from \$2.50 to \$15.00 an acre according to location and state of improvement. The transportation facilities of this section, both rail and water, are good.

3d. The Red and Gray Lands of the Upper Division.

This is the largest of the agricultural divisions of the State, and embraces all the counties north of the *Black Belt*, having an area of, about, 27,500 square miles, and 17,500,000 acres.

The whites have always largely preponderated in this division, hence it has suffered less from demoralized labor than either of the other two sections of the State, and has been able to recover much more rapidly from the blight of the war.

The lands of this division, as a rule, have red or gray soils, with clay subsoils, and are especially adapted to the cultivation of the cereals, such as corn, wheat, and oats, although cotton is quite successfully grown on them. Here, many of the grasses reach perfection, especially in the more northern portions of the division, affording an abundance of excellent pasturage and hay. Some of the orchard products, also, do well in this division—notably the apple, the county of Blount being said to be the best apple growing county on this continent. It is, also, well adapted to the growing of garden vegetables. In the upper part of this division, is the famous valley of the Tennessee River, with its almost unrivalled lands and climate. This fertile and delightful valley offers great inducements to white settlers, and is being rapidly peopled with thrifty new comers. Here, there is a most genial climate, health unsurpassed, a never ceasing supply of pure, wholesome water, gushing out in great springs, good turn pikes, average rail and water transportation facilities, good society—in fact, everything to make life desirable and home attractive.

Of course, in the coal measures, which occupy a very considerable portion of this division, the lands, as a rule, are poor and not of much agricultural value, but they possess untold mineral wealth, and, in the valleys and along the streams of even this region, are capable of producing fine crops.

The Coosa valley in the eastern portion of the State, is also

very fertile and desirable as a home, with one great drawback—want of good transportation facilities, but this will be removed with the opening of the Coosa River to navigation from Mobile.

In conclusion, it may be said, that of the lands of the State, nearly one-fifth, or 6,500,000 acres are Government lands, and subject to entry under the National Homestead and Pre-emption laws, at nominal figures; while of the 14,961,178 acres in the State, embraced in farms, only 5,062,204 are in cultivation, the balance being uncultivated, or primitive wood-land. Besides this available land *lying out*, to use a common expression, there are many large and small farms, under good cultivation, in all portions of the State, which may be rented for one, two, three, four, and five years, or even longer, at prices ranging from one to three dollars an acre, according to locality and improvement: or purchased on long time, and from \$2.50 to \$15.00 an acre. While almost every crop, known and cultivated, can be grown in this State, its great staples have been cotton, corn, wheat and oats. Since the war, in many portions of the State, rice, sugar cane, tobacco, millet, chufas, and the grasses have entered largely into the farming economy, yielding fine returns.

The rainfall of Alabama averages about 45 inches annually, and is so evenly distributed throughout the year and over the whole State, that irrigation is not required at all, and our farmers are saved this great and expensive burden which rests upon the farmers in the Northwest. Here, we have not the periodical visitations of the grasshopper as they do in the Northwest, coming as the plague in Egypt to eat up the substance of the land. Nor have we their vast prairies and treeless plains, with their accompanying northers—rude blasts from the frigid zone, both in and out of season.

It may be confidently asserted, that in no section of the Union, is intelligent agriculture more certain of reward than in Alabama, and while we may not have the richest soils, ours are safe and reasonably sure of an honest return.

Part Fourteenth.

The Coal and Coal Mines, Iron and Iron Works of Alabama.

THE COAL OF ALABAMA.

Prof. Smith, State Geologist, in his *Outline of the Geology of Alabama*, Part Ninth, has so fully described, and given the boundaries of, the three great Coal fields of the State—the Warrior, the Coosa, and the Cahaba, with analyses of the coal in each, it is only necessary for the writer, in this place, to supplement that article with such *statistics* of our coal industry as he has been able to gather.

Alabama is essentially rich in those twin powers—Coal and Iron, which have contributed so powerfully to the civilization and material advancement of the world. Her measures of bituminous coal are a source of great, if undeveloped wealth, and incite surprise whenever examined into, both by reason of their extent and the quality of the coal they contain. Of these measures, no complete surface survey has, as yet, been made, nor have we any estimates, based upon thorough scientific investigation, of the coal beneath the surface; as a consequence, their exact superficial extent is not known, nor the number of tons beneath. A knowledge of the State's immense hidden wealth in this respect, began to dawn upon her people about half a century ago; and the earliest mention of coal among the State archives occurs about that time, in the first *Field Notes* of the Bibb and Shelby county surveyors, who speak of having encountered a *black substance* which resembled coal. In Silliman's Journal, vol. XXVI, appears the earliest printed notice of the use of Alabama Coal—a communication from Dr. Alexander Jones, of Mobile, written in 1834, in which the writer speaks of using this coal in his "little laboratory," and finding it "in every respect equal, if not superior, to the best English coal," and says: "it is brought down to Mobile from Tuscaloosa in flat bottomed boats, and sold at the same price as the Liverpool coal, or at from \$1.00 to \$1.50 per barrel." A few years later, Prof. Tuomey, the eminent Geologist, witnessed the novel and primitive method of *diving for coal*, thus

described: A flat boat is moored parallel with the joints and near the edge of the coal; long, wedge-shaped, crow bars are driven into the seams by means of mauls handled by men in the boat: when a ledge of about two feet is loosened in this way, across the seam, the men take the water, and dive two or three together, according to the size of the masses to be brought up, and lift the coal bodily to the surface and place it in the boat: as an improvement on this simple process, a crane is rigged on the boat, and a chain, slipped around the blocks of coal, raises them into the boat.

The first attempt at coal *mining* in Alabama, according to this same eminent authority, was on a seam 22 inches thick in the vicinity of the State University at Tuscaloosa.

The Professor, in his first Geological Report, says on this subject:

During the months of August, September and October, 1849, there were about two hundred persons engaged in the coal trade of this State; and as only three beds are worked under ground, the rest of the coal raised is taken from the bed of the Warrior river and streams, where of course operations can be continued during the low stages of the water. The boats used are common flat boats with gunwales made of solid timber; the first class have a capacity of about 2,000 bushels, draw 20 to 30 inches of water, and cost \$70 or thereabouts. Coal is brought down the river to Tuscaloosa at about five cents a bushel, a distance of fifty miles, and thence to Mobile, a distance of 355 miles, at an additional cost of nearly five cents; the boat being a dead loss in either case, as it brings but a few dollars.

This industry progressed slowly before and during the war, and it was not until the completion of the Selma, Rome, and Dalton, the South and North Alabama, and the Alabama and Chattanooga (now Alabama Great Southern) Railroads, all traversing, more or less, the mineral region, that it assumed anything like its present proportions. Even now it is in its infancy, and there is still a great drawback to its full development—want of direct and cheap communication with the Gulf: when this want is supplied, the output of coal will be millions instead of thousands of tons. It is estimated that the three coal fields of the State, mentioned above, and which derive their names, respectively, from the three rivers which drain them, comprise in the aggregate about 5,500 square miles, or more than one-tenth of the total area of the State—of which the Warrior field contains about 5,000, and the Coosa, and Cahaba fields, together, about 500. Besides these principal measures, there are other smaller beds in the State, about which little or nothing is known.

The productive capacity of these three fields, from the seams

distinctly traceable *at the surface*, is estimated at 52,250,000,000 (fifty-two billions, two hundred and fifty millions) tons, and that if we should attain a mining capacity equal to the State of Pennsylvania at the present time, it would take 2,000 (two thousand) years to exhaust the supply: and *surface* indications are as nothing compared to what we may, in the light of experience, expect, when *deep boring* has been tried here, as elsewhere.

To show how rapidly, when once well started, the development of these great measures will be, it is only necessary to look at the State of Pennsylvania: in that State in 1820, the output of coal amounted to, only, 365 tons, while in 1875, it had increased to 19,611,334 tons. Here in Alabama, with improved railroad connections with tide water, and which will be in a great measure supplied by the completion of the Mobile and Alabama Grand Trunk Railroad, an almost an air line of easy grades and light curves between Mobile, on the Gulf, and the city of Birmingham in the heart of the mineral region, there is no reason why in the same length of time, the output should not assume similar gigantic proportions.

The construction of this railroad will insure cheap freights, and cheap freights, cheap coal, which will greatly stimulate its consumption, and we shall soon find all our railroads and steamboats discarding wood for coal, which will, of itself, create a very considerable increase in the demand; add to this a greatly increased demand for household and gas purposes, for the manufacture of iron, for the steam marine of the Gulf, and for export, and it will be seen that ready markets will be found for the additional output, and there will be no danger of the supply ever exceeding the requirements of this section. As it is, even with our present limited transportation facilities, the production of coal in Alabama has rapidly increased since 1874, as the following carefully compiled and official figures will show.

PRODUCTION OF COAL IN ALABAMA.

	1874.	1875.	1876.	1877.
	Tons.	Tons.	Tons.	Tons.
South and North Alabama Railroad.....	33,130	57,516	76,140	139,182
Selma, Rome, and Dalton Railroad	14,750	14,890	20,500	22,500
Alabama and Great Southern Railroad..	2,000	2,500	5,000	9,000
Scattering.....		1,000	1,000	1,500
Total.....	49,880	75,906	102,640	172,182

If the improvement continues in the same ratio, and there is no reason to doubt it will, the output during the present year (1878) will be considerably over 200,000 tons. If this amount of

coal, costing the consumer, at present, on an average, five dollars a ton, can be consumed within the circumscribed area to which it is limited by the cost of transportation, what will be the vast amount needed when there is cheaper coal and more direct communication with the Gulf.

THE COAL MINES OF ALABAMA.*

SOUTH AND NORTH ALABAMA RAILROAD.

Beginning with the most northern mines along the line of this railroad, we have first:

Pierce's Mines.—Postoffice, Warrior Station, Jefferson county, 24 miles north of Birmingham; Jas. T. Pierce, Superintendent.†

Alabama Mining and Manufacturing Company.—Postoffice, Warrior Station, Jefferson county; Frank Hoene, Superintendent.

Jefferson Mines.—Postoffice, Jefferson Mines, Jefferson county; operated by Jefferson Coal Company, T. H. Aldrich, President, Marshall Morris, Superintendent; incorporated June 3d, 1876, under general incorporation law of Alabama; operations commenced June 3d, 1876; capital stock \$25,000, in shares of \$100 each and owned in Alabama; vertical shaft 8x14 feet, and 250 feet deep, cutting five seams of coal which lie nearly horizontal, only two of which are workable; coal is hoisted to the *chutes* by means of a horizontal engine, working two elevator cages running in grooves made of oak wood; air shaft and ladder way in addition to the main shaft; chutes, shaft, engine and boiler rooms all under one roof; coal worked in rooms about 30 feet wide, between gangways 400 feet apart and running parallel; in a part of the mine, the *Longwall* system has been adopted; white and black miners, equally divided; present daily output 100 tons; total capacity, 175 tons a day; seams mined, Black Creek, 220 feet down, Jefferson, 187 feet down; coal bituminous, and good for all purposes, but especially for steam and gas; marketed in Alabama, Tennessee, Georgia and Mississippi; prices at the mines range from 50 cents to \$2.50 a ton, according to grade of coal and extent of order; analysis of Black Creek coal given on page 174; output for first year, ending June 1st, 1878, 12,000 tons.

Newcastle Mines.—Postoffice, Newcastle, Jefferson county; operated by the Newcastle Coal and Iron Company, H. M. Caldwell, President, J. T. Milner, Superintendent; operations commenced January, 1873; incorporated in 1874, under the general incorporation law; capital stock, \$40,000, four-fifths owned in Alabama, balance in Tennessee; slope not worked on Newcastle seam; drifts, water level, on the Black Creek seam, whence all the company's coal is taken at present; annual output

*In the enumeration below, only the most prominent mines of the State are given, and even this list may be incomplete. Every effort has been used to make the list as perfect as possible, but indifference on the part of some operators has prevented. However, it will be found very nearly complete, and certainly reliable.

†No information could be obtained of the working of this and the next succeeding mine, but the reader is referred to pages 175-176, for notices of them, by Professor Smith.

25,000 tons; coal much used for gas and steam, and good also for grates; labor, 90 convicts, and 40 white miners.

Sharpe's Mines: formerly *Coalburg Mining Company*, now operated by Thos. Sharpe; at Coalburg, seven and a half miles north of Birmingham; Post-office, Black Creek, Jefferson County; operations commenced January, 1878; property valued at \$25,000, owned in Jefferson County; outside improvements claimed to be the best in the Warrior field; slope 350 feet deep, worked on the *pillar and stall* system, and coal hauled up with a pair of engines of fifty horse power; miners, white and black, no convicts; just getting under way; present daily output, about 30 tons; total daily capacity 200 tons; seam mined, Black Creek; coal marketed in Alabama, Tennessee, Georgia, Mississippi, and Florida.

Pratt Company Mines: Pratt Coal and Coke Company, H. F. DeBardeleben, Pres't, T. H. Aldrich, Sup't; Mines, six miles west of Birmingham; Post-office, Birmingham; Company organized July 18, 1878, under general incorporation law, with a capital of \$60,000 paid in; estimated probable cost of works \$100,000, including the construction of a railroad from Birmingham to Mines, on which work has been begun; there will be three separate openings upon two seams; seams from four and a half to six feet in thickness; main seam especially adapted to Coke making, and the Company has already contracted for the building of fifty coke ovens; coal from other seams excellent for grate and shipping purposes; Company will be in operation by January 1st, 1879, and expect to ship 250 tons a day; total capacity will be about 1,000 tons a day.

Helena Mines: Helena, Shelby County, 80 miles north of Montgomery, and 17 south of Birmingham; Post-office, Helena; operated by the Eureka Company, J. W. Sloss, Pres't, James Thomas, Sup't; stock principally owned in Cincinnati and Louisville; Mines, three in number—Slopes 1, 2, and 3; Slope No. 1, or Wadsworth Mine, is down 400 feet at an angle of about 30°, and sunk on a 3 foot seam; run to full capacity, 100 tons a day, throughout entire year; labor, convict; coal too soft and friable to stand transportation for any distance, but unsurpassed for Coke making; total output of this mine is coked in the Company's coke ovens, connected with the mine, for use at the Company's Blast Furnaces, at Oxmoor; Coke ovens, of the *Bee Hive* pattern, 100 in number, and occupy a space of more than 1,400 feet in length; capacity of each oven 4 tons; yield of Coke 60 per cent; coking process requires about 36 hours, and the ovens turn out about 100 tons a day, all of which is consumed at the Company's furnaces: Slope No. 2, was commenced February, 1877, and in December, of same year, its coal was on the market; angle of dip 31°, depth of slope 450 feet, sunk on Black Shale Seam, three and a half feet in thickness; the *Eureka Coal* from this mine, has a fine reputation for household uses, is very hard, stands transportation well, pure, burns freely, and makes but little ash and dirt; marketed in the cities of Atlanta, Augusta, Macon and Columbus, Georgia, and Mobile and Montgomery, Alabama, and shipped as far north as Franklin, Tenn., within 18 miles of Nashville; the trestling, *chutes*, etc., of this mine required 1,000,000 feet of lumber; the entire output of this mine, 300 tons a day, goes on the market; the Slack is passed through a washing machine, which separates the fine coal from all impurities, and then coked in the

Company's Coke ovens, for use at their Oxmoor Furnaces; Washer run by 20 horse power engine, and fed with slack coal by bottom dump cars; water supplied by two powerful steam pumps, furnishing from 400 to 500 gallons a minute; daily capacity of Washer 150 tons, all of which goes to the Company's Coke ovens; labor employed in this mine and about the Coke ovens, white and black, many of the miners being from Wales, Pennsylvania, Illinois, and Tennessee: the coal is hoisted from both these mines by means of wire rope and drum, driven by a pair of powerful engines; mines are ventilated by steam; little troubled with fire damp, as the air in the mines is carefully watched and gases not allowed to accumulate; the Company's daily output of coal averages 400 tons, and sometimes reaches 500; their own daily consumption of coal averages 220 tons; these are the most extensive mines in the State: Slope No. 3 is now idle, and need not be described.

SELMA, ROME, AND DALTON RAILROAD.

Montevallo Coal Mines: Post-office, Montevallo, Shelby County; Mines three miles west of Railroad, with branch road to Mines from Montevallo; operated by T. H. Aldrich & Co.—T. H. Aldrich, C. Cadle, Jr., W. F. Aldrich, Jr.; operations under present management commenced in 1873; entry to mines on *water-level* extending 1,500 feet from the mouth of mines, at which distance a slope at right angle to the entry, following the dip of the coal at angle of about 8 degrees, extends 1,000 feet, with three lifts, the first of which is worked out; at the head of slope an engine of 40 horse power hauls the coal up the slope, and from engine it is hauled to the *chutes* by mules; a perpendicular shaft for ventilation extends from engine room to surface, a distance of 130 feet; coal blasted out with powder; seam averages two and a half feet in thickness; coal a hard bituminous, free burning, non-coking, red ash coal, leaving no clinker or slag in grates or stoves, and fine for household purposes, for which it is almost exclusively used; present daily output 120 tons; total daily capacity 175 tons; miners and laborers employed 125, one-fourth white, three-fourths colored; output in 1873, 6,000 tons; in 1874, 12,000 tons; in 1875, 14,000 tons; in 1876, 19,000 tons; in 1877, 22,000 tons.*

ALABAMA GREAT SOUTHERN RAILROAD.†

Johnson's Mine.—N. D. Johnson, miner; 14 miles east of Tuscaloosa, and one and a half from Clement's Station; Postoffice, Clement's Station, Tuscaloosa county; coal shipped from Coaling Station; average annual output for past three years, 10,000 tons; present daily output 60 tons; total daily capacity 100 tons; seam mined from 30 to 36 inches in thickness, and coal superior for household uses, and steam; mine fitted up with ample steam power for hoisting and pumping, and a branch

* The Montevallo are the only coal mines now operated on the line of the Selma, Rome, and Dalton Railroad.

†Owing to the legal difficulties which have surrounded this Railroad, coal mining along its line is in an embryo state; but now that the road has passed into good hands, and been relieved of all embarrassment, the development of the mineral resources of the section through which it passes, will be greatly stimulated.

railroad is now being constructed to connect the same with the Alabama Great Southern Railroad at Coaling Station.

Tuscaloosa Mines.—Spencer & Company—E. J. Spencer, President, M. J. Spencer, Superintendent; mines near Tuscaloosa; Postoffice, Tuscaloosa; capital \$20,000, owned in Tuscaloosa; operations commenced January, 1875; mines worked on *Post and Pillar* plan; shaft 100 feet down; seams mined, two—2 feet and 20 inches in thickness; coal, a hard block coal, well adapted for steam purposes; average daily output 30 tons; total daily capacity 80 tons; average annual output 7,000 tons; labor, black and white; coal marketed in West Alabama, and Mississippi; prices at mines range from \$2.25 to \$3.00 a ton; the steam which heats the Alabama Insane Hospital is made of the coal from one of these seams; this company is now loading boats with their coal, for transportation to Mobile, *via* the Warrior river, and the first consignment of 1,000 tons will soon go down; for further information about these mines, see pages 179-180.*

CAHABA RIVER MINES.

These mines are located as follows:

In Sections 1 and 10, T. 24, R. 10, E. Lower Survey.

In Sections 12 and 13, T. 22, R. 5, W. Upper Survey.

In Section 29, T. 21, R. 4, W. Upper Survey.

For further information concerning them, see pages 164-165.

THE IRON OF ALABAMA.

Prof. Smith, State Geologist, in his carefully prepared *Outline of the Geology of Alabama*, Part Nine, of this **HAND-BOOK**, has frequently spoken of the iron ore deposits of the State, and it will be unnecessary here to do more than present *statistics* as far as possible, as was done in the case of the Coal of Alabama.

In the extent and quality of these deposits, Alabama is unquestionably one of the richest States of the Union; and the knowledge of these great ore banks is rapidly disseminating itself throughout the commercial world, and attracting the attention of intelligent observers and practical miners from other States and Europe, many of whom have visited and personally inspected them. Said Hon. John Francis Maguire, M. P., for Cork, and editor of the *Cork Examiner*, at a public dinner at Montgomery, in 1867:

England possesses two important elements of manufacturing success—Coal and Iron. Alabama possesses the same, and perhaps in greater abundance. What do you behold in Alabama? Why a ridge of iron ore extending over a hundred miles through the centre of the State, and coal beds as vast and inexhaustible as those of Pennsylvania.

*There are numerous other places on this Railroad, where coal is mined in a small way.

On the same subject, Mr. Robert Somers, of England, who visited Alabama in 1870, wrote:

They everywhere protrude themselves on the most cursory observation, over thousands of square miles, and coal and iron are found in such immediate juxtaposition, and are raised from the bowels of the earth into such elevations of surface as must render their commercial development much more easy than coal and iron can be developed in most other parts of the world. All this subterraneous wealth exposed to the eye, is now brought within easy reach.

* * * * *

I take with me specimens of hematites from the Red Mountain district, and of Manganese from the neighborhood of Chattanooga. The hematite yields 56 per cent. of metallic iron, and having seen the finest hematites of Cumberland and the North of Spain, I am mistaken if the Alabama ore does not compare favorably with them all.

Hon. Abram S. Hewitt, of New York, in an address before the Polytechnic Association of the American Institute, several years ago, said:

The region in Alabama to which our attention has been called to-night, is, unquestionably, the most interesting region in the United States, with reference to the interests of iron manufacture in this country. It is, in fact, the only place on the American continent where it is possible to make iron in competition with the cheap iron of England.

* * * * *

The cheapest place until now, on the globe, for manufacturing iron, is the Cleveland region, in Yorkshire, England. The distance of the coal and the ore from the furnaces averages there about *twenty miles*. Now, in Alabama, the coal and the ore in many places, are within a *half mile* of each other. The sandstone formation thins out towards the South, and in Tennessee and Alabama appears to be replaced by this fossiliferous iron ore, which commences in New York with a thickness rarely exceeding two feet, but steadily thickens towards the South, averaging four feet in Pennsylvania, seven or eight feet in Tennessee, while in Alabama, probably because the formation was crushed back upon itself in some way, there are some places where the iron has been measured *one hundred and fifty feet* in thickness.

* * * * *

Throwing aside, then, all questions of tariff for protection, here is a possibility upon the American continent of producing iron at as low a cost in labor as in the most favored regions of the world.

* * * * *

This region, so exhaustless in supplies, so admirably furnished with coal, so conveniently communicating with the Gulf, will be of infinitely more consequence to us for its iron than it ever has been for its cotton.

I think this will be a region of coke-made iron on a scale grander than has ever been witnessed on the habitable globe.

The *American Manufacturing and Iron World*, in one of its late numbers, thus spoke of the iron wealth of Alabama:

No State possesses such extensive beds of iron ore as Alabama, so easily worked, of such excellent quality, or so accessible to market.

In Alabama, says this reliable and well-informed Journal:

The necessary elements in the economical manufacture of iron—coal and the rich ores, together with the limestone—can be as cheaply brought together as in any other region of the United States.

Hundreds of similar encomiums upon the iron wealth of Alabama lie before the writer, which might be quoted had he space, but those given are sufficient to show the opinion entertained on this subject, by disinterested parties residing outside the State.

The main deposits of Brown Hematite ore in Alabama, lie along the line of the Selma, Rome, and Dalton Railroad, from Briarfield northward to the State line; and south of Birmingham. The great bed of Fossiliferous ore lies along the Alabama Great Southern Railroad, from Birmingham northeast to the State line. There are, also, large quantities of both Hematite and Fossiliferous ores along the Coosa River from Greensport north to the State line.

What is known as the *Red Mountain* deposit, while being the largest in the State, is really one of the mineral wonders of the American continent. The Iron Mountain in Missouri alone can be considered its compeer. This vast bed of Fossiliferous ore runs from a point a few miles east of Tuscaloosa to the north-eastern limit of the State. It is said to be one hundred miles in length by from half-mile to a mile wide. The stratum is about thirty feet in thickness at the point intersected by the South and North Alabama Railroad. Some idea of the vast extent of the deposit may be obtained from the fact that a fair estimate shows that there are *fifteen million tons* of ore to each mile along the mountain lying above the drainage level.

What constitutes a most interesting and important feature in relation to this remarkable deposit of ore is, its proximity to other materials necessary for its reduction. Both the coal and limestone lie parallel to it, and separated by a few miles, throughout its entire length. It would be impossible to associate the materials in more perfect manner than nature has done.

The Brown Hematites, although not found in any deposits equal to the Red Hematite in the *Red Mountain* range, occur in large and apparently inexhaustible quantities in the counties of Bibb, Shelby, Talladega, Clay, Calhoun, and Cherokee, and within easy reach of the Selma, Rome, and Dalton Railroad.

Mr. E. G. Barney, late prominent in railroad circles in Ala-

bama, after a careful survey made in 1862, estimates the amount of Red Hematite ore in *Red Mountain*, from its lower terminus to the Georgia gap, at five hundred billions tons; and the Brown Hematite in the Cahaba hills and valleys, at two hundred billions tons.

Notwithstanding the great reduction in the price of iron, and the difficulties which have surrounded this industry for several years past, Alabama has largely increased her production of Pig Iron, as the following table from the Report of the *American Iron and Steel Association* for 1878, will show:

Furnaces, Dec. 31st.	Condition of Fur- naces on Dec. 31st.				Make of Pig Iron in net tons. (Tons of 2,000 pounds.)						
	1876		1877								
	1877	In	Out	In	Out	1872	1873	1874	1875	1876	1877
13	5	8	7	6	12,512	22,283	32,863	25,108	24,732	41,241	

Of the 13 furnaces in the State, there are now (September, 1878) in blast, 7, out of blast, 6; a better exhibit in this regard than is made by any other State in the Union, except New York where there are 24 in and 35 out, Pennsylvania where there are 131 in and 147 out, and Ohio where there are 49 in and 58 out.

THE IRON WORKS OF ALABAMA.

SELMA, ROME, AND DALTON RAILROAD.

Stonewall Iron Company.—Three miles from Georgia State line; Postoffice, Stonewall, Cherokee county; J. M. Selkirk, President, Wm. Wurts, Superintendent; one stack 40 feet high, 11 feet across the bosh, open top; daily yield, 18 tons; product, pig iron; hot blast; engine 100 horse power, horizontal; steam cylinder 22 inches in diameter, 6 feet stroke; blast cylinders, 3 in number, 36 inches in diameter, 6 feet stroke; fuel, charcoal; ore, brown hematite; ore beds, near furnace. Out of blast.

Tecumseh Iron Company.—Postoffice, Tecumseh, Cherokee county; Willard Warner, President and Manager; commenced building March, 1873, and blew-in February, 1874; capital stock, \$100,000, paid in; furnace 60 feet high, 12 feet bosh, fire-brick hearth, with water jackets, iron shell around stack; steam hoist, upright blowing engine, 36 inches in diameter, 48 inch stroke; blowing cylinder 48x84 inches; 4 boilers 40 inches by 50 feet; product, hot blast pig iron, mostly foundry; daily yield, 18 tons; total capacity, 25 tons; fuel, charcoal; ore, brown hematite; ore beds, from 300 yards to one mile from furnace; limestone within quarter mile of furnace; furnace in blast, and has been blowing 4 years and 7 months to September 18, 1878, on two fire-brick hearths, and on the present hearth, 3 years and 3 months of that time, and hearth

still good and working admirably; furnace made from February 18, 1874, to September 15, 1878, 20,417 *net* tons pig iron, and been out of blast once for two and a half months—from April 3, 1875, to June 18, 1875, and has now been in blast, continuously, for 3 years and 3 months, on a fire-brick hearth, and made on this hearth during that time, 15,747 *net* tons pig iron.

Rock Run Furnace.—Rock Run Iron Company; Postoffice, Pleasant Gap, Cherokee county; one stack 38 by 9; built in 1873-4; went in blast June 1, 1874; hot blast; annual capacity 4,000 tons. Out of blast.

Alabama Iron Company.—Postoffice, Alabama Furnace, Cherokee county; S. S. Glidden, President and Superintendent; went in blast, January, 1873; capital stock, \$100,000, paid in; furnace, 41 feet high, 9 feet bosh; 3 blowing cylinders, 40 inches diameter, 6 feet stroke; hot blast; product, pig iron; average daily yield, 20 tons; total daily capacity, 28 tons; fuel, charcoal; ore, brown hematite; ore beds, near furnace; furnace built in 1873, started October 1, 1873, first blast averaged 21 93-100 tons daily, and used 112½ bushels charcoal to ton of iron. In blast.

Woodstock Furnace.—Postoffice, Anniston, Calhoun county; A. L. Tyler, President; furnace went in blast April 13, 1873; one stack 43 feet high, 12 feet bosh; closed top; capacity, 500 tons per month; all pig metal for car wheel and foundry purposes; blast, hot and cold; can change on cold blast in a few minutes; blowing cylinder 72 inches in diameter, 4 feet stroke; engine cylinder, 30 inches, and 4 feet stroke; gas used for heating the boilers; fuel, charcoal; ore, brown hematite; ore within quarter mile of the furnace, unlimited in extent; limestone, 4 miles distant; contains 99.24 Carbonate of lime. In blast.

Shelby Iron Company.—Postoffice, Shelby Iron Works, Shelby county; Walter Crafts, Superintendent; company been active for thirty years; two furnaces: No. 1, 12 by 56 feet: No. 2, 14 by 60 feet: average yield per day of No. 1 is, first blast, 13 tons, second blast, 18 tons, third blast, 14 tons—in tons of 2,268 pounds; the first two blasts were on hot blast pig iron, and the last on car wheel pig iron; furnace No. 1 blew out, December 15, 1874, having made a run of three years, nine months and fifteen days: furnace No. 2, went in blast January 6, 1875, and has made an average thus far (February 2, 1875,) of 13 tons per day: size of engine No. 1—blowing cylinder, 66 inches, and 4½ feet stroke; size of engine No. 2—blowing cylinder 84 inches, and 4 feet stroke; waste gases are taken from the tunnel head and used for heating the boilers; ore, brown hematite, and ore banks near the furnace; limestone opening 3 miles from the furnace, at the terminus of a narrow gauge railroad; fuel, charcoal. In blast—one furnace.

Briarfield Iron Works.—Postoffice, Briarfield, Bibb county; 2 stacks, 40x8; built in 1862 and 1864; cold blast; fuel, charcoal. Idle.

COOSA RIVER.

Cornwall Iron Works.—Cornwall Iron Company; Postoffice, Cedar Bluff, Cherokee county; 1 stack 44x9; built in 1862; cold blast; water power; fuel, charcoal. Out of blast.

Round Mountain Furnace.—Round Mountain Coal and Iron Company; Postoffice, Round Mountain Furnace, Cherokee county; 1 stack, 46x10. Long out of blast.

SOUTH AND NORTH ALABAMA RAILROAD.

Eureka Iron Company.—Postoffice, Oxmoor, Jefferson county; J. W. Sloss, President, James Thomas, Superintendent; 2 furnaces, 60 feet high. No. 1, 16 feet in bosh, and blown by engine with steam cylinders 60 inches in diameter, and 5 feet stroke; blowing cylinder 108 inches in diameter, and 5 feet stroke; daily capacity of furnace 45 to 50 tons of pig iron. No. 2 furnace, 14 feet in bosh, and blown by engine with steam cylinder 36 inches in diameter, and 4 feet stroke; blowing cylinder, 84 inches in diameter, 4 feet stroke; daily capacity of furnace, 25 to 35 tons pig iron. Fuel for both furnaces, coke. Ore, fossiliferous, and brought from Red Mountain, 2 miles off, and reached by narrow gauge railroad, owned by company. Iron ranks with any coke made iron, and cost of production about \$11 a ton. Limestone comes from Red Mountain, below ore; 28 Belgian coke ovens at furnaces, 24 feet long. In blast.

Central Iron Works.—Postoffice, Helena, Shelby county; R. W. Cobb, President, R. Feil, Superintendent; 4 puddling furnaces, and 1 heating furnace; 3 engines, of which one of 120 horse power drives the mill; 1 muck mill; 1 guide and hook mill complete; shears, squeezer, and punches necessary for the operation of the mill; manufacture of the Alabama Loop Cotton Tie made a specialty; capacity about 1,000 tons per year. In active operation.

ALABAMA GREAT SOUTHERN RAILROAD.

Cahaba Iron Works.—Postoffice, Irondale, Jefferson county; 1 stack, 46x10½ feet; hot blast; daily capacity, 15 tons. Out of blast.

Edwards' Furnace.—Giles Edwards, Superintendent; Postoffice, Woodstock, Bibb county; 1 stack building.

Part Fifteenth.

*Cotton Manufacturing in Alabama.**

BY

H. A. HARALSON, MATHEWS COTTON MILLS, SELMA, ALA.

The manufacture of cotton in the South is fast attracting the attention which its importance demands, and to which it has long been entitled. Many things have conspired to this end. Before the war, little thought was paid to the subject. We were almost exclusively given up to agriculture. The energies of the people were directed to the *raising* of cotton, and not to its *manufacture*. Surrounded, as we were, with plenty and hardly caring for more than what a bounteous Creator had conferred in rich fields and abundant harvests, our wits slept, while the world was making progress, and reaping more than half of the results of our labor. But a revolution came; a war desolated our homes and swept away the wealth we held in such fancied security, and threw us back upon resources till then undeveloped and immature. Something must be done. To lie supinely and make no effort to rebuild the fortunes of former years, was unworthy the men who had risked and suffered so much. A hard struggle ensued. For years a hand to hand contest was waged, more trying perhaps than the war through which we came. The constant and ever increasing depreciation of values, the bitter fight for the necessities of life, quickened and sharpened the wits of our people, so that economy, long scorned, at last found a home amongst us. We were compelled then to cast about for some new and untried scheme for climbing up again. There was no lack of material. The country blessed above all others, was the same, and it but required patient and thoughtful judgment to find out the true road to prosperity. This has been exercised, and is pointing with unerring finger to *the Manufacture of Cotton in the South*. We begin now to see an interest felt in the subject everywhere;

* Written expressly for this HAND BOOK,

men think of it; men talk of it; and it will not be long before it will be considered worthy to take its place alongside of the grandest of all callings, agriculture, whose right arm it is in the South. These men will act. We will then see our country—our State—once more take rank in point of wealth with what are considered the most favored portions of the land.

The manufacture of cotton has been placed beyond the pale of experiment. "It is no experiment," as was lately said by a prominent manufacturer from the East, who had worked with diligent hand and active brain amongst the cotton mills of the North for thirty years. "It is a success. It has been tried, proven, found worthy, and there is certain fortune to all who, with honest hearts and energetic hands, will engage in it."

Some urge that mills will always fail in the South, because in the whole history of cotton mills in our State, two have succumbed and gone into bankruptcy. They do not know, or care to know perhaps, that it was no fault of the mills which brought disaster, but inadequate financial ability on the part of those in charge. It is yet to be shown where any mill in the South, properly managed, does not make money and that rapidly.

Take for instance the Augusta Cotton Mill. A short time before the war it passed into the hands of thirteen gentlemen, with a debt of \$140,000, one-tenth to be paid annually, with interest upon the whole amount remaining unpaid. So successful was this mill that in four years it paid up the whole debt out of the earnings. Its capital stock then became \$200,000, \$60,000 having been paid in cash at first. During the war it made \$425,000 on a gold basis. The stock was then increased to \$600,000. For eight and three-quarter years thereafter it paid regularly a 5 per cent. quarterly dividend on this capital, and increased the value of the property \$425,000, when its stock was worth \$200 for each share of \$100. It is estimated therefore to be worth \$1,200,000; has paid 200 per cent. dividends annually on the amount in cash originally subscribed. It has 570 looms, with 16,056 spindles, making over 30,000 yards of cloth per day, and only cost the proprietors \$60,000 in cash.

The Granetville and Langley Mills, near Augusta, have almost as good a record, and are paying handsome dividends even in these hard times. "The Granetville Mill," says a pamphlet published in 1873, under the direction and authority of the Company, "came out of the war with its machinery, 9,120 spindles, and 337 looms, worn out, and its capital increased from \$469,000 to \$716,500, a great and injudicious disparity between capital and

spindles. Yet with this great disparity, its exhibit develops the astonishing fact that in 1873, it had renewed the greater part of its machinery, increasing its spindles to 24,000, and its looms to 570, and the productive capacity from 80,000 to 200,000 yards per week; and all this without assessing its stockholders. The principal additions and repairs were completed in the spring of 1868, leaving a commercial capital of \$6,600; and yet, after paying in four years \$229,280 in dividends, the surplus amounted, in March, 1872, to the handsome sum of \$354,288.22—all made legitimately by the manufacture of cotton, and so much confidence was felt in the future of the mill that the treasurer bought up 1,000 shares of their own stock at \$1.45 per share—45 per cent. premium—as an investment for the Company.”

The Eagle and Phoenix Mill, of Columbus, Ga., can make a good showing also. It has paid its stockholders, as the Report of January, 1877, shows, the sum of \$799,000 in dividends from the year 1869, and increased its productive capacity very largely. Its earnings for the past year were about \$150,000, or considerably over 10 per cent. on its capital stock. The company is so much encouraged that it has recently completed a new 20,000 spindle mill, in addition to the old mills, which they confidently allege is the finest in all of its equipments in the South, or perhaps in the country, for the character of goods manufactured.

And a review of the history of all the mills in the South, where they have been properly managed, would convince the most skeptical that the manufacture of cotton in the South is no experiment, but eminently successful, and repays more promptly the capital engaged in it than any other industry of which we know.

But may not these wonderful examples, cited, be the exception, and not the rule in the South? Would mills erected now, in these hard times—in times of depression and strikes, and other civil and monetary revolutions and uncertainties, be likely to pay? A sufficient answer to this would be to point to the dividends recently declared by nearly all the mills of the South. The mills, to which allusion has been specially made, were all small at one time, and would not be regarded as very extensive establishments by Northern manufacturers now. But they have by proper management, and by the great and decided advantage the South possesses for the manufacture of cotton, built themselves up to their present very respectable proportions. Now let us examine some of the advantages the South possesses.

“The extraordinary success and prosperity of the Lowell

manufacturer is well known, (we quote from a pamphlet entitled "Cotton Manufacturing in the State of Georgia," issued in 1873, under the auspices of the mills at and near Augusta, of that State). "Yet the Lowell manufacturer is at a decided disadvantage as compared with his future Southern rival. If he buys his cotton at this point (Augusta), he will have to pay \$7.65 freight and expenses on each bale of cotton he manufactures, *paying this on dirt and waste* as well as on fibre, besides 30 cents per cwt., and insurance, back to New York on his manufactured goods. Our manufacturers, on the other hand, get their cotton at their own doors, and sell about one-half of their manufactured products at home, thus avoiding the expenses referred to: while the other half, which is marketed in New York, costs for insurance and conveyance thither only \$1.90 per bale containing 300 pounds of goods."

"Another item in favor of our continued success as a manufacturing community, consists in the advantage we possess of cheap freights to St. Louis, Cincinnati, and other Western points. The regular rate of freight from New York to St. Louis, during the winter months, is \$1.58 per cwt., or \$4.74 per bale, whilst from here, (Augusta) it is \$1.90 per bale, or 61 $\frac{1}{2}$ c. per cwt. (It is 44 cents per cwt., or \$1.46 $\frac{1}{2}$ per bale from Selma now.) We are a cotton producing people, and our planters cannot be induced to grow their own provisions, consequently we are supplied to a very great extent from the West: and as there is but a limited demand for freight room in that direction, the trains go back comparatively empty. Thus it is that we make our own terms, and save \$2.84 per bale in freights west, on our production, over the New England manufacturer. To make this plain we will endeavor to make a clear tabular statement:

The Lowell manufacturer, buying his cotton in	
Augusta, pays on a bale of cotton of.....	450 pounds.
Less 15 per cent. waste.....	67 $\frac{1}{2}$ "

382 $\frac{1}{2}$ pounds.

A freight of.....	\$ 5.00
A commission of.....	1.50
Insurance.....	50
Exchange and shipping expenses and truckage.....	65

\$ 7.65

Add to this, freight of 30c. per cwt., on 382 $\frac{1}{2}$ pounds of goods to New York, and insurance, 25c.....	1.41
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And we find it costs the Lowell manufacturer to lay down his cotton and ship back to New York.....	\$ 9.06
Deduct cost of shipping goods from Augusta to New York, of 50c. per cwt. freight, and 14c. per cwt.	

insurance, and we have on 382½ pounds of goods, at 64c. per cwt.....	2.44
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Leaving a net saving to the Augusta manufacturer on every bale of cotton manufactured.....	\$ 6.62
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Follow this further, and we have on 382½ pounds of manufactured goods shipped direct to the West, a saving of freight over New York of 94½c. per cwt., or on every bale of cotton.....	3.61
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Leaving in that case a net saving to us of.....	\$10 23
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Take the capital stock of our mills and number of bales consumed, and compare it with the difference in the price of cotton saved, and you will in the first case, (at \$6.62) have a difference of 7 per cent. in our favor; in the latter, (\$10.23) over 10 per cent."

This answers the question fairly and squarely, why these mills are not the exceptions and are the rule in the South, and why our mills have paid and will always pay, with proper management. When the mills of the North are making nothing, we make 10 per cent., or thereabouts.

Again, ice locked for a considerable portion of the year, the Northern looms and spindles stand idle, whilst much of the expense is going on: or in other words, their running time in a year does not equal ours. In every mill the object and aim of a superintendent, after he gets his machinery adjusted to produce the article of goods he desires, is to keep his spindles constantly humming and his looms clacking. They never get tired, and are ever ready to do the bidding of the mind under whose control they so wonderfully work.

By the Census of 1870, we find thirteen establishments in Alabama, employing 1,032 hands, costing per year \$216,679, or within a fraction of 70 cents on an average per day for each employe. There were in Massachusetts at the same date, 191 establishments, employing 43,512 hands of all kinds, costing \$13,589,305, or a little over \$1.12 on an average per hand per day. This shows 42 cents per hand per day more than in Alabama. This difference arises partly, at least, from the mildness of our climate which makes unnecessary the same provision for the maintenance of the labor—and from the scarcity of diversified industries with us offering employment to labor, as well as the willingness on the part of our laborer to be employed at any work which gives a steady living. "But for these advantages, the business could not have been sustained under the difficulties which have beset the South since the war. Onerous taxation by unscrupulous State Governments, unskilled labor, and inability to com-

mand at will the necessary capital, have been drawbacks that only great advantages could otherwise counterbalance." But these are now happily passing away, and the light again breaks in upon the South.

"Not as in Northern climes, obscurely bright,
But with unclouded blaze of living light."

Cotton goods have never been so cheap as now. The mills are selling their production at about 6 cents per yard, for shirting, 7 cents for sheeting, and $7\frac{3}{4}$ cents for drilling. Now what is the profit, if any, in these figures?

In the ordinary $\frac{7}{8}$ shirting, which is in most demand in South Alabama, and Mississippi, we have in every pound, 3.72 yards. This at 6 cents per yard, produces 22.32 cents per pound of goods. The cotton on a basis of $10\frac{1}{2}$ cents per pound, and cost of manufacturing, $7\frac{1}{2}$ cents, make 18 cents, as the cost of turning out a pound of $\frac{7}{8}$ goods, which deducted from the 22.32 cents, for which it sells, gives us the handsome profit of 4.32 cents per pound of goods. And it must be remembered, too, that the $7\frac{1}{2}$ cents per pound paid for changing the fibre into cloth is brought from abroad, and disbursed in the community, which is really a profit to every place in which a cotton mill is situated. It is money brought there which would otherwise stay away.

Examine it in another way and the result is about the same. A mill of 4,000 spindles and 125 looms, we will say, makes 6,000 yards of cloth per day, thus:

3,000 yards $\frac{7}{8}$ shirting, at 6 cents.....	\$180.00
3,000 yards 4-4 sheeting, at 7 cents.....	210.00
Total Gross Income	\$390.00
Cotton on a basis of $10\frac{1}{2}$ cents, 15 per cent. waste	\$220.94
Labor and mill expenses.....	63.44
Office and general expenses.....	9 62
Coal, gas, oil, starch and supplies.....	19.00
Insurance.....	3.11
Charges in selling goods, $2\frac{1}{2}$ per cent.	9.75
Wear and tear machinery, 5 per cent.....	13.69— 339.55
Leaving a net profit, per day, of.....	\$ 50.45
Or for 300 working days, or one year of.....	\$15,135.00

With goods at even these low figures there is a handsome profit to the manufacturer in the South. But when goods advance even $\frac{1}{2}$ cent per yard, the profit becomes so large that no other business in the country can compare with it: no other investment return such an income.

But this much for those immediately engaged in the manufacture of cotton in the South. Let us examine into the benefits

which will accrue to the community that engages largely in it. And we will take Montgomery as an illustration, which will apply alike to all the other cities and towns in Alabama.

It is an axiom of political economy that any community, county, State or country which imports more than it exports in value, must of necessity grow poorer, and that the converse of the rule is equally clear and axiomatic, viz: that the community, county, State or country which exports more than it imports in value must of necessity grow richer. Hence it is that political economists watch with such sharp and eager eyes the result of importations and exportations, knowing full well that this is the key which unlocks and reveals the certainty of poverty or prosperity, as the one or the other is persistently persevered in by the people of any given country or community.

Now, with this A, B, C, rule to start with, apply the results to the city of Montgomery. That city receives on an average, 70,000 bales of cotton annually—sometimes it is more, rarely less. Taking \$60.00 per bale as an average price, we have \$4,200,000 as the sum produced by the sale of all the cotton which comes to that city in one year. There is but little else sent away which brings money in—so little that it is not necessary to consider it in the calculation. Out of this \$4,200,000 every man, woman, and child who lives and deals in Montgomery, must get a living for a year. All the hats, collars, neckties, shirts, coats, pants, drawers, socks, shoes, suspenders, and buttons, (all imported) with the keys in their pockets and the purse in which their share of the money is carried, indeed every thing which they wear and much of what they eat, must be paid for, if at all, out of the money which comes for cotton exported. How vitally are they then interested in the cotton crop, and that it shall bring a large price? A short crop and low prices produce distress, because the imports exceed the exports, in value, and they are growing poorer. A large crop and high prices produce a corresponding amount of prosperity and happiness, (so far as money can produce that) because the exports are exceeding the imports in value. Now, for nearly every year, except one or two, since the war, the people have been importing more than the cotton crop would bring, and the necessary result has followed as surely as the roar of the thunder follows the lightning's flash, or as night succeeds the day. We are poorer than we were a few years back. In the vain struggle to recover fast fading, and fast receding fortunes, we sink deeper in distress and debt, and ponder and think, and think and ponder, over the times when the old order of things

shall exist, and long with aching heart and brain for them to come again. But they haste not to come again, because we are violating a rule, a law, which is never bending and never changes.

Now suppose we were able to manufacture these 70,000 bales of cotton (a thing not impossible: it is our right, and our duty to do so) and what would be the result? If the figures above given are true, it would be worth to Montgomery \$8,400,000, or double what it now brings. Suppose we throw into Montgomery \$4,200,000, annually, more than it now receives for its cotton crop—we will say for five years—and what a rich city it would soon become! Hundreds from afar would be tempted to make it their homes, and we would soon have, instead of 10,000 people, a population of double that number, with double the amount of money there. “Wheresoever the carcass is, there will the eagles be gathered.”

And this would be the case in all of our noble State, our exports would exceed our imports in value. Rich, prosperous, contented, happy, with teeming fields and roaring mills, we would build again the fortunes of our homes, and rear our sons and daughters to be what their forefathers have been, the noblest type of the Anglo-Saxon race.

Our State is peculiarly located. The Alleghany mountains stretching in a southwestern direction from the north, break into hills about the centre of the State. From this point the hills gradually diminish in elevation and sweep away into the flat country of South Alabama. The streams rising in the mountains flow to the rivers, both of which tumble and leap over many falls on their way to the ocean. In a circle, about equi-distant from the mountains and the great agricultural belt in the southern part of the State, we see the falls at Columbus, on the Chatahoochee; those at Tallassee, on the Tallapoosa; those at Wetumpka, on the Coosa; those at Lilly Shoals, on the Cahaba; and those at Tuscaloosa, on the Warrior, with innumerable smaller ones on the creeks and lesser streams, altogether making sufficient power, if properly utilized, to turn spindles enough to consume all the cotton raised in the State, and designed by an all wise Creator for the use of His creatures, who showed people this great territory, and who should aid in clothing the world out of the great staple given to them to the exclusion of a great part of the human family. But it takes a very large outlay of capital in the first instance to control this water. Dams must be built and races cut, which always cost high in a State where the storm fiend rages with such fury, and the water rises so rapidly. Hence

little of this immense power has been brought under the sway of men; and it thunders and roars as loudly in its idle call as it has ever done since the hills were made. But fortunately no one now need be deterred from embarking in the manufacture of cotton because he has not a water power. Steam has long been used, and that profitably. It is yet a mooted question as to which is preferable, steam or water power. Out of the 2,483 cotton mills in England, Scotland and Ireland, with their 37,000,000 spindles and 600,000 looms, the proportion of moving power is 300,480 horse power for steam, to 8,390 horse power for water; and in the United States, the moving power in the 956 establishments, as reported in the Census of 1870, stands 47,117 horse power for steam, against 99,191, for water, or about one-half for steam. But no one can deny the fact that water, when once under control, is cheaper than steam; but experience has shown that situated as we are, steam can be made for many years to come the more economical of the two. Our system of railroads conduces much to this end, as well as the much greater outlay of capital it takes to control water. We cite Montgomery again, as an illustration. Here many railroads converge. Freights are brought down to something like a reasonable rate, and goods can be shipped a thousand miles away as cheaply as they can be sent one hundred on a local tariff. Indeed, in building a cotton mill at a point where these advantages can be had, on account of competition amongst the railroads, enough can be saved over a point on a single line of railroad, where local freights are always exacted, to buy an engine, supply it with coal, and pay your engineer. And this can be done nearly every year, when goods are shipped to distant markets. There is one wall built for controlling the water at the Eagle and Phoenix Mills, in Columbus, Georgia, which, I am informed, cost \$75,000. The interest on this, each year, would purchase a Corliss Engine of sufficient power to turn 5,000 spindles with all the accompanying machinery of a first class establishment. So there is considerable doubt in the minds of mill engineers, as to which is preferable, when all the facts are considered. So steam seems to present the cheapest motive power in this State where coal is now so plentiful and so cheap, for companies with small capital; as much of what must be laid out in controlling water, when such is used, could be invested in machinery where steam is adopted.*

* Mr. Haralson's paper ends here.

THE COTTON MILLS OF ALABAMA.

IN NORTH ALABAMA.

Bell Factory.—Bell Factory Manufacturing Company, J. R. Stevens, President, W. H. Echols, Secretary and Treasurer; on Flint river, in Madison county, 10 miles northeast of Huntsville; Postoffice, Huntsville; joint stock; water power; cotton spindles 2,352; 80 looms, 51, 4-4 sheeting, 25 check looms, balance twill looms; 1 set manufacturing wool cards; 1 custom card; 60 wool spindles; sheetings, ginghams, tucks, and plaids.*

Cypress Mills.—Cypress Mills Company, A. H. Jones, President; Postoffice, Florence; capital stock \$75,000, in shares of \$100 each; operations commenced April, 1873; water power, 12 feet fall; 3,000 spindles; 60 looms; 50 hands; Cypress Mills sheeting; annual consumption, 600 bales cotton.

Brandon Mills.—Irvine, Brandon & Co.; in Lauderdale county, on Little Cypress Creek, 8 miles north of Florence; Postoffice, Florence; water power; 1,500 spindles; 40 hands; annual consumption, 500 bales cotton; yarns for Philadelphia market.

Mountain Mills.—In Colbert county; Postoffice, Barton Station; capital stock, \$65,000; operations commenced, 1873; steam; 2,220 spindles; 70 hands; yarn for Philadelphia market.

Allen's Factory.—L. M. Allen & Co.; on Bear Creek, in Marion county; Postoffice, Allen's Factory, Marion county; capital, \$20,000; operations commenced, 1868; water power; 640 spindles; 30 hands; cotton yarns; annual consumption, 280 bales cotton.

Fall Mills.—Fall Manufacturing Company; on Bear Creek, in Marion county, 2½ miles from Allen's Factory; Postoffice, Allen's Factory, Marion county; capital, \$15,000; operations commenced, October, 1877; water power; cotton yarns and wool carding; hands, 35; 732 spindles; 600 pounds yarn a day; annual consumption, 600 bales cotton; company proposes to introduce looms and woolen machinery.

IN MIDDLE ALABAMA.

Rock Mills.—Rock Mills Manufacturing Company; F. P. Randle, President and Agent; in Randolph county; Postoffice, Rock Mills, Randolph county; 2,300 spindles; 56 looms; brown sheeting, shirting, and osnaburgs.

Bradford Factory.—Simpson & Moore; in Coosa county; Postoffice, Kellyton, Coosa county; osnaburgs and yarns.

Stafford Mills.—H. C. Jones, Treasurer; at Yorkville, in Pickens county; Postoffice, Columbus, Miss.; 1,500 spindles; sheetings, yarns, etc.

Tuscaloosa Mills.—Formerly, *Kennedale Mills*; Tuscaloosa Manufacturing Company, N. N. Clements, President; at Cottdale, on Alabama Great Southern Railroad, 7 miles east of Tuscaloosa; Postoffice, Tuscaloosa; capital stock, \$40,000, \$100 shares, owned in Tuscaloosa;

*This is the pioneer factory in the State.

operations commenced by present Company, October, 1877; steam, 150 horse power; 5,500 spindles; 128 looms; hands, 150; checks, plaids, stripes, cottonades, brown domestics, shirtings, and sheetings; annual consumption, 1,000 bales cotton; 240 looms and fine set of woollen machinery unboxed and never put up; only 128 looms running, which fill present building; Company proposes soon to double capacity of mill, by erecting additional buildings and putting up idle machinery.

Autaugaville Factory.—Theodore Nunn, Proprietor; Postoffice, Autaugaville, Autauga county; 2,200 spindles; sheetings, shirtings, and osnaburgs.

Planters' Factory.—In Autauga county; Postoffice, Autaugaville; 3,000 spindles.

Prattville Mills.—Prattville Manufacturing Co., No. 1, H. F. De Bardeleben, Pres't, Geo. L. Smith, Sec.; Postoffice, Prattville, Autauga county; capital stock, \$107,000; operations commenced, 1846; water-power; 4,600 spindles; 128 looms; 150 hands; annual consumption, 2,500 bales cotton; osnaburgs.

Lehman Mills.—Lehman Manufacturing Co., Lehman, Durr & Co., Montgomery, Proprietors; at Prattville, Autauga county; Postoffice, Prattville; operations commenced, 1866; water-power; 5,300 spindles; 100 looms; 100 hands; annual consumption, 1,800 bales cotton; shirtings and sheetings.

Tallassee Factory.—Tallassee Falls Manufacturing Co., (*new company, just organized*), John W. Durr, Pres't, James A. Farley, Treas., Chas. T. Pollard, Sec.; at Tallassee Falls, on Taliapoosa river, in Elmore county, about 35 miles from Montgomery, and 5½ miles from Cowles' Station, Western Railroad; Postoffice, Cowles' Station, Macon county; water power; 18,000 spindles; 234 looms; 600 hands; annual consumption, 6,000 bales cotton; sheetings, shirtings, osnaburgs and yarns.

Mathews' Mills.—Mathews' Cotton Mills Company, S. F. Hobbs, Pres't, H. A. Haralson, Sec. and Treas., E. S. Hobbs, Sup't; at Selma, Dallas county; Postoffice, Selma; capital stock, \$100,000, \$100 shares, owned in Selma and vicinity; operations commenced, July 1, 1877; steam, 100 horse power; 4,584 spindles; 127 looms; 120 hands; annual consumption, 1,500 bales cotton; shirtings, sheetings, osnaburgs, and drills.

IN SOUTHERN ALABAMA.

Cherokee Mills.—L. F. Irwin, Proprietor; at Mobile; Postoffice, Mobile; operations commenced, February, 1874; steam; 472 spindles; 20 hands; twine, and carpet warps; annual consumption, from 300 to 350 bales cotton.

Mobile Cotton Mills.—Mobile Cotton Mills Company, W. H. Lein-kauf, President, E. S. Barnes, Secretary and Treasurer, Z. Ross, Superintendent; Postoffice, Mobile; authorized capital stock, \$50,000, paid in \$27,700, balance being now subscribed for purpose of doubling capacity of mills; operations commenced, March, 1878; steam; 1,344 spindles; 40 hands; annual consumption, 600 bales cotton; warp yarns, rope, carpet warp, twine, etc.

Part Sixteenth.

Miscellaneous Information.

THE LIME, AND LIME WORKS OF ALABAMA.

Alabama is rich in true dolomite or magnesian limestone, to be found in many localities, of the finest quality, inexhaustible in quantity, and easy of access. This limestone is said to be very uniform in composition, and noted for the whiteness of the lime produced from it, and the excellence and hardness of the mortar it affords, which is often more or less hydraulic.

Lime burning is already a considerable industry in the State, and is rapidly growing, as the following list of its principal Lime Works shows.

Chewacla Lime Works.—Chewacla Lime Company, Chas. T. Polard. President, Avery L. Clapp, Superintendent; 3 miles off Western Railroad, near Yongsboro, in Lee county; Postoffice, Yongsboro, Lee county; capital stock, \$100,000; rock been worked since 1853; 3 Kilns, granite; works equal to best; rock quarried within 100 feet of Kilns, and inexhaustible; daily capacity, 250 barrels; daily production, 250 barrels; works run to full capacity, and demand greater than supply; marketed all through Georgia, Alabama, Louisiana, Florida, and Mississippi; average annual sales since 1871, 45,000 barrels; sales in 1877, 50,000 barrels; labor mixed, and reliable; fuel, wood; stave, heading, and barrel machinery, first class; Company's narrow gauge railroad connects works with Western Railroad, at Yongsboro; Company in fine condition.

Analysis of Limestone, by Prof. Tuomey.

Carbonate of Lime.....	55.16
Carbonate of Magnesia.....	44.22
Oxide of Iron.....	.44
Insoluble Matter.....	.79

100.61

Calera Lime Works.—N. B. Dare, Proprietor; at Calera, Shelby county; Postoffice, Calera; business commenced at Shelby Lime Works in 1868, removed to Calera in 1874; one large Kiln, with barrel mill, cooper and blacksmiths' shops; daily capacity, 110 barrels; daily production, 90 barrels; rock in immediate vicinity of Kiln; fuel, wood, or coal; labor, good; average annual production since commencing operations, 30,000 barrels; lime marketed throughout the South as far as Galveston, and North as high as Louisville and Cairo.

Analysis of Limestone, by Prof. Cassels, Cleveland, Ohio.

Moisture evolved at 212 degrees, Fahrenheit.....	0.50
Carbonate of Lime.....	98.65
Phosphate of Lime.....	0.75
Silex.....	0.10
	<hr/>
	100.00

Siluria Lime Works.—T. G. Holt, Proprietor; at Siluria, Shelby county; Postoffice, Siluria; operations commenced, October 1, 1871; daily capacity, 100 barrels; daily production, 80 barrels; limestone, of best quality, inexhaustible, and in immediate vicinity of Kiln; fuel, wood and coal; lime marketed from Savannah, Georgia, to Galveston, Texas. No analysis of limestone furnished.

Whiting Lime Works.—Flournoy, Moore, and Holt; on South and North Railroad, 73 miles north of Montgomery, in Shelby county; Post-office, Longview, Shelby county; one large Kiln, with barrel mill, cooper, and blacksmith shops; daily capacity, 105 barrels; daily production, 80 barrels; limestone, of excellent quality, inexhaustible, and half mile from Kiln; fuel, wood and coal. No analysis of limestone furnished.

THE DANIEL PRATT GIN COMPANY.

Works located at Prattville, Autauga county, and owned and operated by M. E. Pratt, and H. F. DeBardeleben; Postoffice, Prattville; established by the late Daniel Pratt, in 1838, and has been in continuous and successful operation since, except during the war; manufacture, the Daniel Pratt Cotton Gin; annual capacity, 1,500 gins; 75 hands; water power.

STOCK RAISING IN ALABAMA.

Prior to the war, the planters in Alabama were so given up to agriculture, especially the cultivation of cotton, that little or no attention was given to this important industry. Now, however, stock raising is rapidly growing in favor among our people, and the importation of blooded stock yearly increasing. The Durham, the Ayrshire, and the Jersey thrive remarkably well with us, particularly in the more northern portion of the State, and are easily acclimated. The grasses of that section are rich and afford excellent pasturage and hay. The immense cane tracts of Middle and Southern Alabama, also afford excellent pasturage for stock. Our climate being almost exempt from snow and ice, and our winters mild and pleasant, stock, here, does not require the great and expensive care necessary to shelter and provide for it, during

the long, bleak winters of higher latitudes. Horses and mules are, also, successfully raised in many parts of the State.

SHEEP HUSBANDRY IN ALABAMA.

For the same reason—exclusive attention to cotton culture—sheep raising has, heretofore, received but minor consideration at the hands of Alabama planters, notwithstanding there are few sections where sheep can be raised more profitably than in this State. Now, this husbandry is beginning to be appreciated by our farmers, and wool growing taking its proper rank among our other industries.

GAME.

The woods of Alabama abound in game of nearly every description—such as wild deer, turkeys, ducks, partridges, woodcocks, snipe, etc., which affords not alone very fine sport, but contributes largely to the table. The markets of Mobile, in the proper seasons, are filled with game, brought from the immediate vicinity of the city or the interior of the State.

FISH.

Nowhere is to be found a greater variety of Fish than the waters of Alabama afford, and the quality of many of these varieties is unsurpassed. The Bay of Mobile is famous in this respect; and the rivers of the State are filled with many kinds of fish. The United States Government is now engaged in stocking our rivers with shad, one of the most delicate and highly prized of the finny tribe, and in time a bountiful harvest of this most excellent fish may be expected.

POULTRY.

In every section of Alabama, poultry of all kinds may be successfully raised, and nowhere does the domestic turkey and duck do better. The most improved breeds of fowls find a congenial climate in this State, and thrive well.

VEGETABLES.

Every variety of vegetable is successfully cultivated in Alabama; and, owing to our mild climate, in many parts of the State fresh vegetables may be gathered from the garden throughout the entire year—summer and winter.

ALABAMA TRADE STATISTICS.

TOTAL COTTON RECEIPTS AT MOBILE FOR 61 YEARS.

<i>Years.</i>	<i>Bales.</i>	<i>Years.</i>	<i>Bales.</i>
1818.....	7 000	1848.....	438,324
1819.....	10,000	1849.....	517 846
1820.....	16 000	1850.....	350 297
1821.....	25 390	1851.....	451 697
1822.....	45 423	1852.....	549 772
1823.....	49,061	1853.....	546 514
1824.....	44 924	1854.....	538,110
1825.....	58 283	1855.....	454 595
1826.....	74,379	1856.....	659 738
1827.....	89,779	1857.....	503 137
1828.....	71,155	1858.....	522,843
1829.....	80 329	1859.....	704 406
1830.....	102 684	1860.....	842 729
1831.....	113,075	1861.....	548,441
1832.....	125 605	1862-4.....	—
1833.....	129 366	1865.....	75,305
1834.....	149 513	1866.....	429 102
1835.....	197 847	1867.....	239 516
1836.....	237 590	1868.....	366,193
1837.....	232 685	1869.....	230 621
1838.....	309 807	1870.....	306 061
1839.....	251 742	1871.....	404 673
1840.....	445 725	1872.....	288 012
1841.....	317 642	1873.....	332 457
1842.....	318,315	1874.....	299 578
1843.....	481 714	1875.....	320 822
1844.....	467,990	1876.....	374 672
1845.....	517 196	1877.....	360,918
1846.....	421 669	1878.....	419,071
1847.....	322,516		

COMPARATIVE VALUE OF DOMESTIC EXPORTS

To Foreign Ports from Mobile (years ending June 30th) for eight years.

1871.....	\$21 874 708	1875.....	\$10 136 814
1872.....	13 954,660	1876.....	15 156,224
1873.....	12 375,115	1877.....	12 812 055
1874.....	10,282,734	1878.....	9,126,634

COMPARATIVE VALUE OF IMPORTS

Of Foreign Goods into the Port of Mobile (years ending June 30th) for eight years.

1871.....	\$1,811 614	1875.....	\$1,060,229
1872.....	1,761,657	1876.....	1,611,020
1873.....	1,099 716	1877.....	648,404
1874.....	886,411	1878.....	1,148,442

TABLE OF ENTRANCES AND CLEARANCES

At the Port of Mobile for the year ending June 30th, 1878.

<i>Arrivals.</i>				<i>Clearances.</i>		
ENTRIES.	VESSELS.	TONS.	CREW.	VESSELS.	TONS.	CREW.
Foreign.....	75	44 093	1,043	78	46 617	1 090
American...	64	31 167	635	81	32,218	749
Coastwise...	74	21,666	660	55	12,766	346
Total.....	213	96,926	2,338	214	92,601	2,185

VALUE MOBILE FISH AND OYSTER TRADE.

	1878.	1877.
Fish.....	\$30 401.55	\$25 000.00
Oysters, Plants.....	30 000 00	26,000 00
Oysters, Reefers.....	70,000 00	66 500.00
Total.....	\$130,401.55	\$117,500.00

Part Seventeenth.

*The Climate of Alabama, and its Adaptation to Health and Comfort.**

BY

WM. H. ANDERSON, M. D., PROFESSOR OF PHYSIOLOGY IN THE MEDICAL
COLLEGE OF ALABAMA, MOBILE.

The State of Alabama lies between the 31st and the 35th parallels of latitude. It may be inferred, therefore, that the climate is temperate in winter and not excessively hot in summer. It is bounded by Tennessee on the north, and the Gulf of Mexico and a part of Florida on the south. About midway between the Gulf coast and the Tennessee line, the land rises considerably, and culminates in a semi-mountainous district, reaching an elevation in some places of twelve hundred feet above the sea level. As every county is more or less populated, and as many of the counties are in affiliation with the Medical Association of the State, we are enabled to have a pretty correct idea of the sanitary condition of every part of the State.

It may be said without fear of contradiction that Alabama is one of the healthiest States in the Union. The various papers which have been read before the Medical Association for the last thirty years, accompanied as they have been in many instances by valuable statistics, go to prove that very few portions of the State are unhealthy, and these few localities suffer only at certain seasons of the year. The great agricultural and mineral regions of the State are unexceptionably healthy, while the pine district, reaching a hundred miles from the coast, and intersected by numerous clear and cool streams of the purest water, is free from every kind of disease. The longevity in this region is proverbial, and the climate is so bland, equable and delightful, that this portion of the State is fast becoming a popular resort during the fall and winter months for invalids from the Northwest, who are forced to seek at that season a more genial climate than their own.

As this paper is designed to give a truthful account of the

* Written expressly for this HAND-BOOK.

sanitary condition of Alabama, we will divide the State into Northern, Middle, and Southern Alabama, and treat of each section separately. Northern Alabama embraces a district of country bounded by Tennessee on the north, Georgia on the east, and Mississippi on the West. The whole division is a fine farming country and is interspersed by many lofty hills averaging from four hundred to twelve hundred feet above the level of the sea. It is well watered and possesses a delightful climate. The diseases in summer consist of light bilious fever, intermittent fever, and sometimes mild dysentery and bowel affections. These diseases are brief in their course and generally speaking very amenable to medical treatment. They are seldom fatal, and the robust and healthful appearance of the population proves that they seldom make serious inroads on the constitution. In the autumn the type of the fevers is rather more severe, but still the vast majority of the cases are relieved by medicine intelligently prescribed. The winter diseases consist principally of lung troubles, such as pneumonia, pleurisy, bronchitis, etc. On the whole, the health of Northern Alabama all the year round, will compare favorably with that of the same extent of territory in any part of the United States; while the temperature in winter is milder than that of Tennessee, and in summer, owing to the general elevation of the country, the climate is in every way delightful.

The Middle Division of Alabama comprises the principal cotton growing section of the State. It is comparatively level, and is watered by numerous streams. As compared with the Northern Division it is not as healthy, and portions of it are visited in the latter part of summer and the early autumn with fevers of a severe type. Before the recent civil war, this was a comparatively healthy section of country, but the neglect of proper drainage and a more careless system of agriculture have had the effect of developing in the hot season of the year bilious fevers of a dangerous type. Every year, however, remedies this evil, as the drainage becomes better, and the method of farming more consistent with the suppression of malarial poison. As a consequence of this, the last three years have been more healthy, and there is every reason to believe that the summer and autumnal fevers will annually become lighter and more easily managed. The sanitary measures that will be recommended by the State Board of Health, will contribute much towards lessening the cause of malignant diseases in this and other parts of Alabama. The Board of Health of the State is just getting into ac-

tive operation, and in a few years every county that has a medical society, will be materially improved in a sanitary point of view. It is now a fact pretty well established, that the health of any given district of country is dependent mostly on the sanitary police of such district. Fully alive to this problem of modern science, the Medical Association of Alabama is doing its utmost to press upon the Legislature of the State the importance of putting the whole subject of sanitary police under the control of the medical profession of the State. At their instigation much has already been done by the intelligence of our Legislators, and more will be yearly accomplished in the same direction.

Southern Alabama contains a small portion of the cotton region, and the whole district of country bounded by Florida and the Gulf coast on the south. This region, except on the margin of the water courses, is covered with a growth of lofty pines, and has a sandy soil. With the exception of the immediate coast it is rather sparsely populated. It is a delightful region of country, well adapted to the growth of grapes and some of the tropical fruits. The whole district is exceedingly healthy. The climate is softened in winter and refreshed in summer by the sea breezes from the Gulf of Mexico. No more beautiful country for the residence of man is to be found than Southern Alabama. The elevation above the sea level rarely reaches more than three hundred and fifty feet, and the table lands, at this elevation, are noted for their salubriousness, and for the comfortable residence of invalids from the North and West, both in winter and summer. Abundance of fruit and large vineyards are found in this region. It is here, also, that the charming city of Mobile is located, immediately on the Bay of Mobile, and within forty miles of the Mexican Gulf. The climate of Florida, for a winter residence, although more noted, is not so agreeable or so wholesome, as the Gulf Coast of Alabama. The chilly eastern breeze from the Atlantic, which is so disagreeable in Florida in February and March, is here replaced by the soft wind from the tropics. If it should happen that for any period of a week or two in winter, the Gulf breeze is loaded with too much moisture for invalids, they have but to retire from twenty to forty miles from the coast, where the elevation is too great for the fogs to ascend, and where pure springs, a sandy soil, and a bracing winter atmosphere, furnish all the avenues to health that could be desired. Here, also, is to be found the best of hunting, the fields and forests being alive with partridges, wild turkeys, deer, and other game.

On the eastern shore of Mobile Bay, are several delightful watering places, much frequented in summer, and serving also as winter residences for some of the inhabitants. The climate on this shore is delightful all the year round, and parties are now contemplating the building of a sanitarium for invalids in the winter as well as the summer season. At Point Clear, about twenty miles from the city of Mobile, there is a large and elegant hotel, filled in summer with visitors from Alabama, Mississippi, and Louisiana. It is also open in winter to all who may desire to take advantage of the salt air from the Gulf. This watering place is the finest, most healthy, and most commodious in the South. The bathing houses are within fifty yards of the hotel. In the rear, and at the eastern end of the building, may be found the magnolia, growing, in many instances, to an enormous size, and filling the surrounding air, in spring, with its agreeable perfume. Some orange groves in full bearing already exist, and others on a large scale are coming to maturity. The whole shore, for twenty-five miles, is studded with cottages and handsome residences, which are filled to their utmost capacity during four or five months of the year. The Gulf breeze on this side of the bay must be felt to be appreciated. The Atlantic coast has no wind that can be compared with it, either for health or for agreeability. Its temperature is the same whether it rises into a gale, or blows lightly enough only to ruffle the quiet water of the bay. For this reason it is allowed to blow night and day through the cottages, where the doors and windows are left open, continually, to receive it.

The city of Mobile, at the head of the bay, contains about forty thousand inhabitants. Of these, twenty-eight thousand are white, and twelve thousand are colored. As a place of residence it is delightful, and is one of the healthiest cities in the Union throughout the entire year. In the Past, the only drawback to its prosperity and rapid growth, has been the occasional appearance of Yellow Fever in an epidemic form. We have reason to believe, however, that there will be few, if any, more epidemics. The efficient Sanitary Police under the direction of a well organized Board of Health, has had the effect to keep this disease out of the city for seven years past, although it has raged at Pensacola, Pascagoula, and New Orleans, adjacent cities, in daily communication with Mobile.

From this brief sketch of the Climate of Alabama, it will be seen that no State in the Union possesses more desirable advan-

tages for the new settler, and none can surpass it in comfort for the population already living within its borders.

It may be well here to mention some of the various diseases which the experience of the past half century proves to be benefit by a winter residence at or near the Gulf coast:

First, consumption of the lungs. About forty years ago Mobile was a great resort for consumptives from the Northern States. It was thought that the mild climate would check the disease, and in time restore the patient to health. At any rate, it was reasonable to suppose that the disease would be much mitigated, and that out door exercise, always so important, could be indulged in much oftener than in the North. The consequence was that hundreds of patients came annually to Mobile to pass the winter months. But the hope was delusive, and the city soon lost its reputation as a good winter climate for consumption. Experience indeed proved that during the greater part of the winter the patients were comfortable and seemed to rally; but every now and then there came from the Gulf heavy fogs, which interfered seriously with continued improvement. But for the warm and oppressive atmosphere during the prevalence of these fogs, Mobile was all that could be desired. At the period we speak of, however, there was no retreat from the moist atmosphere in question. There were no railroads to transport the invalids in an hour or two to a location above the influence of the Gulf fogs. Nor was there any inhabited country to receive them if they could have been moved off temporarily. The case is now different. In less than two hours the railroads will take us to a beautiful country, more than three hundred feet above the tide water, well cultivated with vineyards and orchards, populated by intelligent and hospitable inhabitants, and entirely out of the reach of the lowland mists. Under such circumstances Mobile is regaining her reputation as a winter home for consumptives. Patients may remain in the city and enjoy the comforts, amusements and elegancies of city life at least three weeks in every winter month. When the damp season comes on, they can go in an hour's notice to the pine hills in question and never suffer from the oppressive weather. After spending a few days in this dry and healthy region, where the time may be occupied, if desired, in hunting and fishing, they can return to the city to meet again the sunshine and the numerous enjoyments of city life. If this high country north of Mobile had been opened up and inhabited thirty or forty years ago, the city and the Gulf coast would never have lost reputation as a location suitable for consumptives from the Northern

States. Invalids, particularly consumptives, ought to spend much of their time in the winter season in or near a city. The mind has a powerful influence over the body, and while the latter requires to be invigorated by soft atmosphere and an agreeable climate, the former must also be nourished by the psychical stimulants of amusement in its various forms, and the conventionalities of elegant and refined society. Thousands of consumptives from England and Northern Europe are sent by their physicians to the cities on the Mediterranean to spend the winter. This is not altogether because of the climate, since Madeira and some of the Islands in the temperate latitude are known to possess a rather better climate; but it is because in these islands there is nothing but the congenial atmosphere, while at Nice and other cities of Southern Europe, there are associations and diversions which occupy the mind, and daily sustain and animate it with agreeable reflections.

What has been said of climate as regards consumption, will apply also to other chronic diseases of the chest. Bronchitis is a very general ailment in the North and Northwest in the winter season. It is almost impossible to cure it when the patient is daily exposed to the rude blasts of the North. No amount of warm clothing will keep the cold air from affecting the system. It must be drawn into the lungs, and there the air at a temperature of 20 to 30° Fahr., suddenly comes in contact with a delicate inflamed membrane of the temperature of 98 to 100°. How is it possible then that the latter should not suffer? Various devices have been used to soften the air by drawing it through woollen cloth placed over the mouth, and sometimes substituting for this a net work of fine wire, which being warmed by the escaped air, would heighten the temperature of the ingoing breath. But these have little effect. All physicians know that they are poor substitutes, and that they retain the poisonous volatile animal matter of exhalation, and give it back again with the air that is inhaled. For these reasons Southern climates in winter act favorably on bronchitis. Another good effect produced by residence in a Southern climate during the harsher seasons, is that the mild atmosphere assists the action of remedies which are often required in chronic bronchitis. It is through the *skin* that some of the most important of these remedies act; and the more temperate the climate, within certain bounds, the more active are the cutaneous exhalations. So mild is the temperature in Mobile and on the Gulf coast in winter, that several days together are often passed without the necessity of lighting a fire. These mild spells of

weather may be spent by invalids in the open air, where in addition to the grateful sunshine, the moral effect of the rich foliage and the gay flowers of winter, insures that restorative influence which the mind always has over the body.

In this short sketch we cannot particularize all the diseases, that are benefitted by a residence in a southern climate, during winter. We must mention, however, the benign effect of a soft climate on chronic affections of the skin. The writer has known cases of Eczema and Psoriasis of forty years standing, to be apparently cured by a continued residence of twelve months, consecutively, in Mobile. These cases came from Virginia, where the temperature is never so low as in the Northern and Western States. The cure is attributable to the mild breezes of the Gulf, which are never harsh, and which prevail abundantly both in winter and summer. Chronic affections of the skin, although quite prevalent in the northern parts of the United States, are comparatively rare on the Gulf coast. Few originate here, and the greater number of persons who come to the South from northern climates, troubled with those affections, are either soon cured, or very much relieved. Such diseases, also, are more amenable to treatment in southern than in northern climates.

It has been the custom, for several years past, for physicians in the higher latitudes to send to Louisiana, Alabama and Florida, patients suffering with Bright's disease and other chronic affections of the kidneys. This custom, suggested by theory, has been found to work well in practice. Any climate, not too debilitating, that favors continued action of the perspiratory glands of the skin, must have a salutary effect in relieving congestion of the kidneys. We do not know of any case of Bright's disease that has been cured by being transferred to the South, but there is no doubt that the change is beneficial in winter, and makes the condition of the patient much more comfortable. This is proved by the amelioration of many cases that are annually sent to Mobile and New Orleans. Doubtless the free exercise in the open air, which cannot be enjoyed in the North, has much to do with this temporary improvement.

It was the opinion of the late Professor J. C. Nott, whose honesty of purpose, and critical acumen, were never doubted by those who knew him, that the Gulf coast is the healthiest portion of the United States, and is particularly adapted to the amelioration of many diseases, made worse by passing the winter and early spring in northern districts. Certainly few men were as competent to judge in such matters as himself. A residence of

forty years in Mobile, with a reputation spreading over the entire Union, brought to his notice many sufferers from the North, who sought his medical aid during their winter sojourn in the South. The eminent Doctor Warren Stone, of New Orleans, shared the same opinion. Without dwelling longer, however, on this branch of the subject, we will append some statistical tables, which may be of service to such as are curious in the matters adverted to in the foregoing sketch.

Temperature.

From 1840 to 1875, the mercury of Fahrenheit's thermometer ranged from 65 to 101 degrees in the *summer* season. These are the extremes; since the thermometer rarely reaches 98 degrees in any part of the State. The average summer temperature may be estimated at from 78 to 88 degrees from June 1st to September 30th.

In October, November, and during the winter months, the extremes of the temperature are from 80 to 20 degrees. Rarely, very rarely, does the thermometer indicate as low as 20 degrees, and December, January and February, are often passed through with, without a lower temperature than 28 degrees. The mean temperature of the State at large may be estimated at about 61 degrees.

Mortuary Statistics of Mobile.

As far as the health of Mobile is considered, the following tables are given to show the mortality for the *white* population for the six years from 1845 to 1850 inclusive.

Mortality of White Population.

1845.	1846.	1847.	1848.	1849.	1850.	Total.
320	339	443	566	637	433	—2,738.

The *white* population during these years averaged from fifteen to eighteen thousand. The *white* population for the last six years has averaged *twenty-eight* thousand, and yet the whole number of deaths among the *whites* during this period is very little more than in the six years, from eighteen hundred and forty-five to eighteen hundred and fifty, inclusive.

The following table is taken from the Health Office Reports.

Mortality of White Population.

1872.	1873.	1874.	1875.	1876.	1877.	Total.
519	510	563	509	482	410	—2,993.

In the above list of deaths is included those of one epidemic

of yellow fever, and one severe epidemic of small pox. The latter counted more than one hundred and fifty deaths.

This table shows how much more healthy the city is now, than it was twenty-five years ago, and even then, Mobile was considered one of the healthiest cities in the Union. For the greater portion of the last six years the Board of Health has been very actively at work, and doubtless the increased health is owing to that circumstance.

If we turn now to the mortality of the State at large, we will find that in proportion to the population, it is less than the mortality of most of the other States in the Union. We append the following tables compiled from the Census of 1860, by the author of the "Alabama Manual and Statistical Register," for the year 1872.

The per centage column shows the number of deaths for every *one hundred persons* in the various States mentioned.

	POPULATION.	DEATHS.	PERCENTAGE.	ONE FOR EVERY
Alabama.....	964 201	12 760	1 32	75
Arkansas.....	435 450	8,860	2.03	49
California.....	379 994	3,705	.97	102
Connecticut	460,147	6,138	1 33	74
Delaware	112 216	1 346	1.11	90
Florida.....	144 425	1 769	1 25	79
Georgia.....	1 057 286	12 807	1 21	82
Illinois.....	1,711 951	19 263	1 12	88
Iowa.....	674 913	7 260	1.07	93
Indiana.....	1 350 438	15 205	1.12	88
Kansas.....	107 306	1,443	1.34	74
Kentucky.....	1,155 684	16 467	1 44	70
Louisiana.....	708,002	12 329	1.74	57
Maine.....	623 379	7 614	1 21	82
Maryland.....	687,049	7 370	1 07	93
Massachusetts	1,231,063	21 304	1.73	57
Michigan.....	749 118	7 399	.98	101
Minnesota.....	172,123	1,109	.64	155
Mississippi.....	791 305	12,214	1.54	64
Missouri.....	1,182,012	17 557	1.48	67
New Hampshire.....	326,073	4 469	1 37	72
New Jersey.....	672 035	7,525	1 11	89
New York.....	3,880 735	46 881	1.20	82
North Carolina.....	992 622	12 607	1 27	78
Ohio.....	2,339 511	24,724	1.05	94
Oregon.....	52,465	251	.47	209
Pennsylvania	2,906 115	30 214	1.03	96
Rhode Island.....	174 620	2 479	1.41	70
South Carolina.....	703,708	9,745	1 38	72
Tennessee.....	1,109 801	15 176	1.36	73
Texas.....	604 215	9 369	1 55	64
Vermont.....	315 093	3,355	1 06	93
Virginia.....	1,596 318	22 474	1.40	71
Wisconsin.....	775 831	7,129	.92	108
District of Columbia	75 080	1,275	1 69	58
Nebraska.....	28 841	381	1 32	75
New Mexico.....	93,516	1,305	1 39	71
Utah.....	40,273	374	.92	107

Let us now compare Alabama with some other States, in order to show the comparative mortality from CONSUMPTION alone. Again we take the Census of 1860 :

	<i>Population.</i>	<i>Deaths by Consumption.</i>
Alabama.....	964 201.....	596
Tennessee.....	1,109 801.....	1,440
Massachusetts.....	1 241,063.....	4,845
Kentucky.....	1,155 684.....	1,742
Missouri.....	1,182,012.....	1,302

This table exhibits a very small mortality from Consumption in Alabama as compared with the States mentioned in the table.

When we come to examine the mortality from fevers (bilious, congestive, remittent, etc.) we find that even here, Alabama, in proportion to her population, loses fewer of her citizens by fever than Kentucky, Tennessee, South Carolina, Georgia, and other Southern States—except perhaps Florida.

It is needless, however, to multiply arguments in favor of the health of Alabama. Viewed in any light, it is a God favored country, and is one of the very healthiest States in the Union.*

THE MINERAL SPRINGS AND WATERS OF ALABAMA.

Bailey Springs.—Lauderdale county, 9 miles northeast of Florence; connected with Memphis and Charleston Railroad, at Florence, by daily stages; location high and healthful; waters excellent for dyspepsia, dropsy, gravel, scrofula, and all kindred diseases.

Blount Springs.—Blount county, immediately on South and North Railroad, 130 miles north of Montgomery; surrounded by lofty mountains, and very healthful; waters especially adapted to cure of scrofula, rheumatism, dyspepsia, and all affections of the bladder and urinary organs.

Sulphur Springs.—St. Clair county, on Alabama Great Southern Railroad, 112 miles north of Birmingham; locality, salubrious and elevated.

Talladega Springs.—Talladega county, Selma, Rome, and Dalton Railroad; locality, very healthy and elevated; water good for many diseases.

Shelby Springs.—Shelby county, on Selma, Rome, and Dalton Railroad; high and healthful, with valuable waters.

Livingston Water.—Livingston, Sumter county, on Alabama Great Southern Railroad; artesian well; water especially adapted to the cure of dyspepsia.

*Dr. Anderson's paper ends here.

Bladon Springs.—Choctaw county, 3 miles from Tombigbee river; locality healthful, and waters very fine for many purposes.

Healing Springs.—Washington county, 14 miles west of Buckatunna Station, Mobile and Ohio Railroad; waters very valuable in many diseases.

Jackson Springs.—Clarke county, near Jackson; waters excellent.

Conclusion.

In 1819, Alabama became a member of the Federal Union—one of the sisterhood of States. At that time, her broad territory was almost an unbroken wilderness, and to a great extent obscured in primitive darkness: alone, the home of the native red man, and the hardy pioneer. It was not long to remain so, however, for the advancing tide of civilization brought with it brave hearts and strong arms, to conquer and subdue. The State's admission into the Union, was followed by a marked increase in population, and in 1830, scarcely eleven years thereafter, her population numbered 309,527 souls—a gain of 181,626. Her progress was very rapid from that time until 1860, when we find her a great and opulent State, and ranking among the first of the States in population, wealth, and intelligence. But the war came, and Alabama was destined to walk through the fires of adversity. For four years, destruction and death swept around and over her: and in 1865, she emerged from the war, utterly impoverished, and despairing. Her people once more essayed the task of climbing into the sunshine of prosperity, now more difficult than ever, and slow and painful was their progress, as round by round they mounted up. At last, after years of bitter struggle and self-denial, their patience and fortitude begin to be rewarded, and the State's great natural advantages and wonderful resources to receive the attention they so eminently deserve. It was to direct the attention of the outside world to these advantages, and to aid our people in their brave efforts to build anew their shattered fortunes, more than for selfish ends, that the work of this Compilation was begun. If it succeeds in this respect, no matter how limited the extent, much good will have been accomplished, and the Author repaid for his labor. It has been his endeavor in an impartial manner, without embellishment or concealment, to present the truth about the State and her resources, firmly impressed with the conviction that no words of his could add a feather's weight to the potency of this truth. In as clear a manner as possible, but with much labor, he has aggregated FACTS, and left them, in every instance, to speak for themselves. He has made no attempt to gloss, and style has been ignored for perspicuity. Whatever may be its faults, honesty of purpose and statement cannot be denied to the work.

In the preparation of the book, the Author has received great assistance from numbers of gentlemen, in all departments, to whom he begs to make here, the proper acknowledgements. They have the double satisfaction of knowing that they have not only placed him under obligations, but have done the State a service.

In the compass of the work, much has been said; but much has been necessarily left unsaid, to prevent swelling the volume to too great size. If, too, some subjects appear unduly abridged, let it be remembered what an immense mass of matter claimed the Author's attention, and how necessary it was for him to select and condense.

If there is one thing which this Compilation has clearly demonstrated to the Author's mind, it is that Alabama, in time, is destined to become one of the grandest and richest of the States, and that her early future is bright with promise. And this is not mere uninformed conjecture, but a dispassionate conviction after an attentive study of her situation and resources. Nature has done all for Alabama, and it only remains for her people, by an intelligent use, to make the most of these munificent gifts. Her geographical position is unsurpassed for health and commerce; her climate, genial; her soils, varied, fertile, and reasonably sure of a remunerative yield; her great forests clothed with a magnificent growth, fit for all human uses; her hills and valleys teeming with untold mineral wealth; her great water lines only awaiting full development to take rank with the most favored. Add to these, her great railroads, traversing every section of the State; her excellent postal, telegraph, and express facilities; her fine wagon roads; her large and growing cities; her wise Constitution; her stable and conscientiously administered government; her impartial, but firmly maintained laws; her religious toleration; her churches; her equitable tax laws, low rate of taxation, and freedom from oppressive public debt; her excellent schools, and public school system; her numerous universities and colleges; her wise exemption and liberal immigrant and alien laws; her humane public institutions; her total exemption from northerners, grasshoppers, and many other ills which afflict the people of Texas and the Northwest; her pure wholesome water, and we find here, in a remarkable degree, all the conditions which go to make life comfortable and home happy. But Alabama is no Utopia—free from care and the necessity for labor. Here, as elsewhere, man must eat his bread in the sweat of his brow. Still, with us, he will find more comforts and reap the fruit of his labor at an earlier day than on the wild, treeless plains of the

Northwest. It has been truthfully said, and the words have a peculiar application to Alabama, that the South freed from the influence of slavery, and gradually recovering from the effects of the civil war, is rising up to a future which necessarily must far exceed its highest prosperity in former days; and the South decidedly has the advantages of climate, soil, and natural wealth almost intact, which few of the Northern and Western States share. The *London Times*, the great expositor of English views, confirmed this statement when in its leader of June 23d, 1876, it said, speaking of the progress of the Southern States, that unless this progress should be unexpectedly checked, the calamities of the civil war will be quickly obliterated by the rising tide of a prosperity almost without parallel, even in American experience.

The people of Alabama are noted for their warm hearted hospitality, and stand with outstretched arms to welcome to her inviting fields the enterprising and industrious, extending to all a cordial invitation to come and make this their home.

Appendix.

THE GREAT SEAL OF ALABAMA.



ALABAMA STATE GOVERNMENT.

*Executive Department.**

Rufus W. Cobb.....	Governor.
William W. Screws.....	Secretary of State.
Willis Brewer.....	Auditor.
Isaac H. Vincent.....	Treasurer.
LeRoy F. Box.....	Superintendent of Education.
Henry C. Tompkins.....	Attorney General.

Judicial Department.

SUPREME COURT.

Robert C. Brickell.....	Chief Justice.
Amos R. Manning.....	Associate Justice.
George W. Stone.....	“ “

CHANCELLORS.

Northern Division.....	H. C. Speake.....	Huntsville.
Eastern “	N. S. Graham.....	Tuskegee.
Middle “	Charles Turner.....	Selma.
Southern “	Huriosco Austill.....	Mobile.
Western “	A. W. Dillard	Demopolis.

*Elected August, 1878; Go into office, November, 1878.

CIRCUIT JUDGES.

First Judicial Circuit.....	G. H. Craig.....	Selma.
Second " "	Jas. Q. Smith.....	Montgomery.
Third " "	Wm. S. Mudd.....	Birmingham.
Fourth " "	Wm. B. Wood.....	Florence.
Fifth " "	Lewis Wyeth	Guntersville.
Sixth " "	Harry T. Toulmin.....	Mobile.
Seventh " "	Luther R. Smith.....	Butler.
Eighth " "	Henry D. Clayton.....	Clayton.
Ninth " "	Jas. E. Cobb.....	Tuskegee.
Tenth " "	John Henderson.....	Talladega.
Eleventh " "	John K. Henry	Greenville.
Twelfth " "	W. L. Whitlock.....	Gadsden.

Legislative Department.

SENATE.*

NAME.	POSTOFFICE.	DISTRICT.
Banks, G. R.....	Tallassee, Elmore County.....	Tenth.
Brooks, L. E.....	Mobile, Mobile County.....	Thirty-third.
Buell, David.....	Greenville, Butler County.....	Seventeenth.
Burford, P. D.....	Camden, Wilcox County.....	Twenty-second.
Bush, Jno. W.....	Marion, Perry County	Eighteenth.
Chambers, Wm. H.....	Oswichee, Russell County.....	Twenty-ninth.
Clanton, Jerome.....	Eutaw, Greene County.....	Fourteenth.
Clarke, Wm. E.....	Demopolis, Marengo County....	Twentieth.
Cunningham, J. L.....	Gadsden, Etowah County.....	Sixth.
Dobbs, L. A	Fort Payne, De Kalb County ...	Fifth.
Duncan, P. N.....	Talladega, Talladega County....	Eighth.
Gordan, A. C.....	Abbeville, Henry County	Twenty-third.
Hargrove, A. C.....	Tuscaloosa, Tuscaloosa County..	Eleventh.
Harrison, Geo. P., Jr..	Auburn, Lee County.....	Twenty-seventh.
Howel, W. P.....	Oak Level, Cleburne County....	Seventh.
Johnson, W. L.....	Nixburg, Coosa County	Fifteenth.
Little, W. G., Jr.....	Livingston, Sumter County.....	Thirty-first.
Musgrove, Wm. A.....	Palo, Fayette County.....	Twelfth.
McCurdy, W. D.....	Hayneville, Lowndes County...	Sixteenth.
Padgett, J. A.....	Rutledge, Crenshaw County	Twenty-fifth.
Randolph, B.....	Blount Springs, Blount County..	Third.
Rather, Jno. D.....	Tuscumbia, Colbert County	Second.
Rice, Francisco.....	New Market, Madison County..	Fourth.
Robinson, J. J.....	LaFayette, Chambers County ...	Ninth.
Roquemore, Jno. D.....	Eufaula, Barbour County.....	Twenty-fourth.
Rosamond, W. C.....	Jasper, Walker County.....	Thirteenth.
Satterfield, J. R.....	Selma, Dallas County.....	Thirtieth.
Seay, Thos.....	Greensboro, Hale County	Thirty-second.
Thornton, E. S.....	DeSotville, Clarke County.....	Nineteenth.
Torrey, R. C.....	Claiborne, Monroe County.....	Twenty-first.
Troy, D. S.....	Montgomery, Montgomery Co..	Twenty-eighth.
Wilson, J. A.....	Union Springs, Bullock County..	Twenty-sixth.
Wood, W. J	Florence, Lauderdale County...	First.

* The Senators from the odd-numbered Districts, except the 13th and 17th, hold over from the Session of 1876-7: Those from the 13th and 17th, and the even-numbered Districts, were elected August 5, 1878.

HOUSE OF REPRESENTATIVES.*

NAME.	COUNTY.	POSTOFFICE.
Akers, M. T.....	Marion.....	Pikeville.
Alexander, W. J.....	Cleburne.....	Edwardsville.
Armstrong, N. W.....	Chambers	Fredonia.
Akers, J. J.....	Jefferson	Warrior.
Ash, Geo. W.....	St. Clair.....	Branchville.
Bailey, P. W.....	Dale.....	Ozark.
Barnett, W. H.....	Pike.....	Troy.
Betts, E. C.....	Madison.....	Huntsville.
Billingslea, W. C.....	Dallas.....	Selma.
Boger, Daniel.....	Lawrence.....	Moulton.
Bowdon, F. W.....	Talladega.....	Talladega.
Boykin, Frank, Jr.....	Dallas.....	Selma.
Bradford, T. H.....	Marengo.....	Linden.
Brooks, A. L.....	Macon.....	Tuskegee.
Caldwell, G.....	Bullock.....	Enon.
Carson, H. A.....	Lowndes.....	Hayneville.
Campbell, G. D.....	Jackson.....	Scottsboro.
Clarke, Eli.....	Conecuh.....	Evergreen.
Clarke, J. M.....	Lawrence.....	Moulton.
Clark, G. B.....	Mobile.....	Mobile.
Cochran, W. G.....	Tuscaloosa.....	Tuscaloosa.
Cooper, Jesse D.....	Bibb.....	Centreville.
Clopton, David.....	Montgomery.....	Montgomery.
Critcher, James.....	Marshall.....	Guntersville.
Crutcher, Wm. R.....	Limestone.....	Athens.
Culver, I. F.....	Bullock.....	Union Springs.
Curtis, Benjamin H.....	Winston.....	Houston.
Dark, O. P.....	Tallapoosa.....	Alexander City.
Davidson, A. S.....	Blount.....	Blount Springs.
Davis, L. R.....	Limestone.....	Athens.
Dawson, W. R.....	Tallapoosa.....	Camp Hill.
Dolive, Louis.....	Baldwin	Daphne.
English, George.....	Wilcox.....	Camden.
Evans, James.....	Jackson.....	Stevenson.
Fletcher, A. S.....	Madison	Huntsville.
Fouville, J. C.....	Crenshaw.....	Rutledge.
Forshee, J. W.....	Chilton.....	Maplesville.
Foster, J. A.....	Barbour.....	Clayton.
Foster, W. F.....	Macon.....	Tuskegee.
Fuller, J. A.....	Perry.....	Perryville.
Gilbert, R. F.....	DeKalb.....	Collinsville.
Griggs, A. W.....	Chambers.....	West Point, Ga.
Hand, M. W.....	Greene.....	Eutaw.
Heacock, J. W.....	Talladega.....	Talladega.
Hearn, J. J.....	Randolph.....	Wedowee.
Hughes, R. S.....	Butler.....	Greenville.
Hutto, J. C.....	Walker.....	Jasper.

* Elected August 5th, 1878.

NAME.	COUNTY.	POSTOFFICE.
Huey, B. M.....	Perry.....	Marion.
Jack, W. P.....	Franklin.....	Russelville.
James, Gilliam.....	Hale.....	Greensboro.
Jolley, W. J.....	Mobile.....	Mobile.
Kennedy, J. M.....	Clay.....	Ashland.
Kirkpatrick, M. L.....	Montgomery.....	Montgomery.
Lawrence, Jno.....	Cherokee.....	Centre.
Lawson, W. H.....	Montgomery.....	Montgomery.
Lee, J. J.....	Pickens.....	Pickensville.
Legg, G.....	Fayette.....	Fayette C. H.
Lowther, Wm.....	Lee.....	Opelika.
Lyons, Marcus.....	Escambia.....	Pollard.
Martin, L. W.....	Russell.....	Seales Station.
Massey, Chas. F.....	Barbour.....	Clayton.
McCain, Thos. S.....	Butler.....	Greenville.
McCarron, Neill.....	Mobile.....	Mobile.
McDougald, W. A.....	Russell.....	Columbus, Ga.
McIllwain, John H.....	Dallas.....	Selma.
Molette, W. P.....	Dallas.....	Selma.
Muldon, S. C.....	Mobile.....	Mobile.
Nettles, W. T.....	Monroe.....	Monroeville.
Nicholson, Jno. C.....	Montgomery.....	Montgomery.
Owens, A. H.....	Pike.....	Troy.
Patton, Thos. J.....	Greene.....	Eutaw.
Pearson, W. G. B.....	Tuscaloosa.....	Tuscaloosa.
Portis, B. P.....	Sumter.....	York.
Pitts, J. W.....	Shelby.....	Columbiana.
Purifoy, Jno. W.....	Wilcox.....	Snow Hill.
Ralls, J. P.....	Etowah.....	Gadsden.
Ramsey, J. R.....	Sumter.....	Ramsey's Station.
Register, Jno. F.....	Geneva.....	Geneva C. H.
Riley, M.....	Covington.....	Andalusia.
Reynolds, R. J.....	Henry.....	Abbeville.
Rushing, H. M.....	Coffee.....	Elba.
Saunders, I. H.....	Lamar.....	Vernon.
Saunders, Geo. C.....	Madison.....	Huntsville.
Sharp, H. A.....	Morgan.....	Decatur.
Sheid, J. M.....	Calhoun.....	Jacksonville.
Smith, W. J.....	Autauga.....	Prattville.
Smith, H. L.....	Lowndes.....	Burkville.
Smith, Jno. L.....	Mobile.....	Mobile.
Steele, J. A.....	Colbert.....	Tuscumbia.
Stribling, W. C.....	Washington.....	St. Stephens.
Taylor, Geo. W.....	Choctaw.....	Butler.
Taylor, B. F.....	Lauderdale.....	Centre Star.
Thompson, D. J.....	Coosa.....	Mt. Olive.
Walker, Wm. A.....	Jefferson.....	Birmingham.
Waller, Chas. E.....	Hale.....	Greensboro.
Willett, E. D.....	Pickens.....	Carrollton.

NAME.	COUNTY.	POSTOFFICE.
Williams, Thos.....	Elmore.....	Wetumpka.
Winn, Frank N.....	Clarke	
Wood, J. N	Lee.....	Opelika.
Wolf, Henry A.....	Marengo.....	Linden.

U. S. SENATORS FROM ALABAMA.

John T. Morgan.....	Selma.....	Dallas County.
George E. Spencer.....	Decatur.....	Morgan County.

ALABAMA CONGRESSMEN.*

1st District—Jas. T. Jones.....	Demopolis.....	Marengo County.
2d District—Hilary A Herbert.....	Mongomery.....	Montgomery County.
3d District—Jere N. Williams.....	Clayton.....	Barbour County.
4th District—Chas. M. Shelley.....	Selma.....	Dallas County.
5th District—Rob't F. Ligon.....	Tuskegee.....	Macon County.
6th District—Goldsmith W. Hewitt.....	Birmingham....	Jefferson County.
7th District—Wm. H. Forney.....	Jacksonville.....	Calhoun County.
8th District—Wm. W. Garth.....	Huntsville.....	Madison County.

FEDERAL JUDGES IN ALABAMA.

William B. Woods.....	Atlanta, Ga.....	Circuit Judge.
John Bruce.....	Montgomery, Ala.....	District Judge.

U. S. LAND OFFICERS AND DISTRICTS IN ALABAMA.

MOBILE DISTRICT.

C. T. Stearns.....	Mobile.....	Register.
James A. Somerville.....	Mobile.....	Receiver.

MONTGOMERY DISTRICT.

Pelham J. Anderson.....	Montgomery.....	Register.
Paul J. Stroback.....	Montgomery.....	Receiver.

HUNTSVILLE DISTRICT.

John M. Cross.....	Huntsville.....	Register.
Peter J. Kaufman.....	Huntsville.....	Receiver.

CUSTOMS DISTRICTS AND COLLECTORS IN ALABAMA.

Robert T. Smith.....	Mobile.....	Collector.
L. O. Townsley.....	Mobile.....	Deputy Collector.
Gustavus Horton.....	Mobile.....	Special Deputy Collector.

U. S. INTERNAL REVENUE COLLECTORS AND DISTRICTS IN ALABAMA.

Louis H. Mayer.....	Mobile.....	First District.
James T. Rapier.....	Montgomery.....	Second District.

* Elected November 5, 1876.

CONSULS AND CONSULATES IN ALABAMA.

Austria and Hungary..	William F. Stoutz...	Mobile...	Consul.
Belgium	W. J. Peckham.....	"	Acting Vice Consul.
Brazil.....	A. J. Ingersoll.....	"	Vice Consul.
France.....	C. Pillichody.....	"	Vice Consul.
Germany.....	Julius Buttner.....	"	Consul.
Great Britain.....	F. J. Cridland.....	"	Consul.
Italy.....	G. Aite.....	"	Consul.
Mexico.....	C. LeBaron.....	"	Vice Consul.
Netherlands	W. J. Ledyard.....	"	Vice Consul.
Russia	J. Weber.....	"	Vice Consul.
Spain	C. LeBaron.....	"	Vice Consul.
Sweden and Norway....	J. R. Edwards.....	"	Vice Consul.

COUNTIES AND COUNTY SEATS IN ALABAMA.

<i>County.</i>	<i>County Seat.</i>	<i>County.</i>	<i>County Seat.</i>
Autauga.....	Prattville.	Henry.....	Abbeville.
Baldwin.....	Daphne.	Jackson.....	Scottsboro.
Barbour	Clayton.	Jefferson	Birmingham.
Bibb.....	Centreville.	Lamar.....	Vernon.
Blount.....	Blountsville.	Lauderdale.....	Florence.
Bullock.....	Union Springs.	Limestone.....	Athens.
Butler	Greenville.	Lawrence.....	Moulton.
Calhoun.....	Jacksonville.	Lee.....	Opelika.
Chambers	LaFayette.	Lowndes.....	Hayneville.
Cherokee.....	Centre.	Macon.....	Tuskegee.
Chilton.....	Clanton	Madison.....	Huntsville.
Choctaw.....	Butler.	Marengo	Linden.
Clarke.....	Grove Hill	Marion.....	Pikeville.
Clay.....	Ashland.	Marshall	Guntersville.
Cleburne	Edwardsville.	Mobile	Mobile.
Coffee	Elba.	Monroe.....	Monroeville.
Colbert.....	Tusculumbia.	Montgomery	Montgomery.
Conecuh.	Evergreen.	Morgan.....	Decatur.
Coosa.....	Rockford.	Perry.....	Marion.
Covington.....	Andalusia.	Pickens	Carrollton.
Crenshaw.....	Rutledge.	Pike.....	Troy.
Cullman.....	Cullman.	Randolph	Wedowee.
Dale.....	Ozark.	Russell.....	Seale.
Dallas.....	Selma.	Shelby.....	Columbiana.
DeKalb.	Lebanon.	St. Clair.....	Ashville.
Elmore.....	Wetumpka.	Sumter.....	Livingston.
Escambia.....	Pollard.	Talladega.....	Talladega.
Etowah.....	Gadsden.	Tallapoosa.....	Dadeville.
Fayette.....	Fayette.	Tuscaloosa.....	Tuscaloosa.
Franklin.....	Frankfort.	Walker.....	Jasper.
Greene.....	Eutaw.	Washington.....	St. Stephens.
Geneva.....	Geneva.	Wilcox.....	Camden.
Hale.....	Greensboro.	Winston.....	Houston.

NEWSPAPERS IN ALABAMA.

Abbeville, Henry County Register.	Livingston Journal.
Ashville, Southern Ægis.	Marion Commonwealth.
Athens Post.	Mobile Register.
Bangor, Broad Axe.	Mobile News.
Birmingham Independent.	Mobile Journal of Commerce.
Birmingham Iron Age.	Monroeville Journal.
Blountsville, Blount County News.	Montevallo, Shelby Guide.
Butler News.	Montgomery Advertiser.
Camden, Wilcox Vindicator.	Montgomery, Advance.
Carrollton, West Alabamian.	Montgomery, Southern Plantation.
Centre, Cherokee Advertiser.	Moulton Advertiser.
Clayton Courier.	Notasulga Universalist Herald.
Columbiana, Shelby Sentinel.	Opelika Observer.
Courtland Recorder.	Opelika Times.
Cullman, Alabama Tribune.	Oxford Tribune.
Cullman, Pioneer.	Ozark, Southern Star.
Cullman, Southern Immigrant.	Prattville, Autauga Citizen.
Dadeville, Head Light and News.	Prattville, Southern Signal.
Decatur News.	Roanoke, Randolph County News.
Demopolis, Marengo News-Journal.	Scottsboro, Alabama Herald.
Eufaula, Times and News.	Scottsboro Citizen.
Eutaw, Whig and Observer.	Seale, Russell Register.
Evergreen, Conecuh Star.	Selma Times.
Fayette Gazette.	Selma, Alabama Baptist.
Florence Gazette.	Selma, Southern Argus.
Gadsden Times.	Springville Enterprise.
Gainesville Dispatch.	Talladega, Alabama Templar.
Goodwater, Coosa News.	Talladega, Our Mountain Home.
Greensboro, Alabama Beacon.	Talladega, Reporter & Watchtower.
Greensboro, Southern Watchman.	Troy Enquirer.
Greenville Advocate.	Troy Messenger.
Grove Hill, Clarke Co. Democrat.	Tuscaloosa Gazette.
Gulf Citizen, Mobile.	Tuscaloosa Times.
Hayneville Examiner.	Tuscumbia, North Alabamian.
Huntsville Advocate.	Tuskegee, Macon Mail.
Huntsville Democrat.	Tuskegee News.
Huntsville Independent.	Union Springs, Bullock Co. Guide.
Jacksonville Republican.	Union Springs, Herald.
Jasper, Mountain Eagle.	Vernon Pioneer.
LaFayette Clipper.	Wetumpka Times.

TABLE

Showing the population of Alabama at each decennial Census since its admission into the Union.

<i>Census.</i>	<i>Whites.</i>	<i>Free Colored.</i>	<i>Slaves.</i>	<i>Total.</i>
1820.....	85,451	571	41,879	127,901
1830.....	190,406	1,572	117,549	309,527
1840.....	335,185	2,039	253,532	590,756
1850.....	426,514	2,265	342,844	771,623
1860.....	526,271	2,690	435,080	964,041
1870.....	521,384	475,608	.....	996,992

PUBLIC DEBT OF ALABAMA.*

DATE OF ISSUE.	FOR WHAT PURPOSE ISSUED.	CHARACTER.	PRESENT RATE OF INTEREST.	AMOUNT.
February 18, 1867.....	For Current Expenses.....	Certificates†.....	None.....	\$ 37,255.00
January 1, 1874.....	Liquidation of Floating Debt and Patton Certificates.....	Obligations‡.....	8 per cent.....	1,000,000.00
January 1, 1876.....	Release of State's liability on Endorsed Bonds A. & C. R. R. Class "C" Bonds.....	Class "C" Bonds.....	2 per cent.....	1,000,000.00
July 1, 1876.....	In exchange for R. R. Substitution Bonds.....	Class "B" Bonds.....	5 per cent.....	542,500.00
July 1, 1876.....	In exchange for Straight State Bonds.....	Class "A" Bonds.....	2 per cent.....	7,000,000.00
Total.....				\$ 9,579,755.00

TRUST FUNDS.||

Sixteenth Section Trust Fund.....	\$1,747,165.50
Valueless Sixteenth Section Trust Fund.....	97,091.33
Surplus Revenue Trust Fund.....	639,086.80
University Trust Fund.....	300,000.00
Agricultural and Mechanical College Trust Fund.....	253,500.00—
Total.....	\$3,066,843.63
Total.....	\$12,646,598.63

* This Table is intended to represent the State Debt as it will stand when the adjustment, now in progress, is completed. Known as *Patton Certificates*. The original amount of this issue was \$398,650; of which, all but \$37,255 has been paid or otherwise redeemed by the State.

† Known as *Horse-shoe Money*.

‡ These are all School Funds, and the interest is applied exclusively to their support. The interest on the two first is 6 per cent.: on the third, 4 per cent.: and on the two last, 8 per cent. For the nature of these funds, see pages 48, 58, and 59.

HISTORIES AND BOOKS DESCRIPTIVE OF ALABAMA.

History of Alabama. By A. J. Pickett. 2 vols.

History of Alabama. By Willis Brewer. 1 vol.

Romantic Passages in Southwestern History. By A. B. Meek.

Flush Times of Alabama and Mississippi. By Joseph G. Baldwin.

Public Men in Alabama. By Wm. Garrett. 1 vol.

Alabama Manual. By Joseph Hodgson. 1 vol.

Alabama. By John T. Milner. 1 vol.

The Hill Country of Alabama. By Alabama Great Southern Railroad Company. 1 vol.

Geological Reports. By M. Tuomey, first State Geologist.

Geological Reports. By Eugene E. Smith, present State Geologist.

Reports of the Commissioner of Industrial Resources.*

*Office now abolished.

ALTITUDES IN ALABAMA.*

<i>Name.</i>	<i>Altitude in feet.†</i>	<i>Name.</i>	<i>Altitude in feet.†</i>
Athens	709	Milner's.....	840
Auburn.....	850	Mobile.....	10
Birmingham	602	Montgomery	162
Blount Springs.....	434	Opelika.....	812
Blue Mountain Station.....	816	Selma	147
Brandon.....	877	Shelby Springs.....	554
Cullman.	802	Springville	708
Decatur.....	577	State Line (S., R. & D. R. R.).	930
Eureka, or Oxmoor.....	960	Sulphur Springs.....	888
Greenville.....	450	Talladega.....	586
Huntsville.....	692	Tuscaloosa.....	162
Jacksonville.....	653	Valley Head.....	1058
LaFayette.....	865		

* This list is only partial. It was impossible to make it more complete.

† Base line, Gulf of Mexico.

Distances in miles by shortest Post Routes, between the two principal cities of Alabama, and seven of the larger cities of the United States :

FROM	TO						
	New Orleans.	Boston.	New York.	Philadelphia.	Washington.	Chicago.	San Francisco
Mobile.....	140	1,471	1,235	1,146	945	1,232	3,363
Montgomery.....	320	1,293	1,057	968	1,007	858	2,941

CONGRESSIONAL DISTRICTS. * †

First District.—Clarke, Choctaw, Marengo, Mobile, Monroe, and Washington.

Second District.—Baldwin, Butler, Conecuh, Crenshaw, Covington, Escambia, Montgomery, and Pike.

Third District.—Barbour, Bullock, Coffee, Dale, Geneva, Henry, Lee, and Russell.

Fourth District.—Dallas, Hale, Lowndes, Perry, and Wilcox.

Fifth District.—Autauga, Bibb, Chambers, Chilton, Coosa, Clay, Elmore, Macon, and Tallapoosa.

Sixth District.—Fayette, Greene, Jefferson, Marion, Pickens, Lamar, Sumter, Tuscaloosa, Walker, and Winston.

Seventh District.—Blount, Calhoun, Cherokee, Cleburne, DeKalb, Etowah, Marshall, Randolph, St. Clair, Shelby, and Talladega.

Eighth District.—Colbert, Franklin, Jackson, Lauderdale, Lawrence, Limestone, Madison, and Morgan.

*For the State Senatorial Districts, see *ante*, Constitution of Alabama, Art. IX, Sec. 7.

†It was originally intended to insert in this connection, the Judicial Circuits, and Chancery Divisions of the State; but as the General Assembly to convene in 1878, will doubtless make many and important changes in these, it was deemed best to omit them.

TABLE OF UNITED STATES MONEY.

The value of this money increases by tens, which makes it very simple and easy to reckon; and hence accounts are kept in dollars and cents, in this State.

10 mills <i>m.</i> make.....	1 cent, <i>c.</i>
10 cents “	1 dime, <i>d.</i>
10 dimes “	1 dollar, <i>¢</i> .
10 dollars “	1 eagle, <i>£</i> .

The mill is not a coin, and is only used in counting.

VALUE OF FOREIGN SILVER AND GOLD COINS.

An English Shilling.....	\$ 24 cents.
“ Crown	1.20
“ Sovereign	4.84
“ Pound.....	4.84
“ Guinea.....	5.00
A franc of France	19
A thaler of Germany	67
A Spanish doubloon.....	16.00
A South American doubloon	15.60
Four shillings and two pence sterling.....	1.00

ABBREVIATION OF NAMES OF STATES AND TERRITORIES.

Ala.....	Alabama.	Miss.....	Mississippi.
Alaska.....	Alaska Ter.	Mo.....	Missouri.
Ariz.....	Arizona Ter.	Mont.....	Montana Ter.
Ark.....	Arkansas.	Nebr.....	Nebraska.
Cal.....	California.	Nev.....	Nevada.
Colo.....	Colorado.	N. H.....	New Hampshire.
Conn.....	Connecticut.	N. J.....	New Jersey.
Dak.....	Dakota Ter.	N. Mex.....	New Mexico Ter.
Del.....	Delaware.	N. Y.....	New York.
D. C.....	Dist. of Columbia.	N. C.....	North Carolina.
Fla.....	Florida.	Ohio.....	Ohio.
Ga.....	Georgia.	Oreg.....	Oregon.
Idaho.....	Idaho Ter.	Pa.....	Pennsylvania.
Ill.....	Illinois.	R. I.....	Rhode Island.
Ind.....	Indiana.	S. C.....	South Carolina.
Ind. T.....	Indian Ter.	Tenn.....	Tennessee.
Iowa.....	Iowa.	Tex.....	Texas.
Kans.....	Kansas.	Utah.....	Utah Ter.
Ky.....	Kentucky.	Vt.....	Vermont.
La.....	Louisiana.	Va.....	Virginia.
Me.....	Maine.	Wash.....	Washington Ter.
Md.....	Maryland.	W. Va.....	West Virginia.
Mass.....	Massachusetts.	Wis.....	Wisconsin.
Mich.....	Michigan.	Wyo.....	Wyoming Ter.
Minn.....	Minnesota.		

WEIGHTS OF GRAIN AND PRODUCE PER BUSHEL.

<i>Article.</i>	<i>Pounds.</i>	<i>Article.</i>	<i>Pounds.</i>
Wheat.....	60	Onions.....	57
Rye.....	56	Dried Peaches.....	33
Corn, shelled.....	56	Irish Potatoes.....	60
Corn, in ear, new.....	76	Sweet Potatoes.....	60
Corn, in ear, old.....	73	Peas (split).....	60
Oats.....	32	Turnips.....	55
Barley.....	48	Blue Grass Seed.....	10
Beans.....	60	Clover Seed.....	60
Beans (Castor).....	46	Flax Seed.....	56
Bran.....	24	Hemp Seed.....	44
Buckwheat.....	52	Timothy Seed.....	45
Corn Meal (bolted).....	46	Coarse Salt.....	50
Corn Meal (unbolted).....	48	Fine Salt.....	50
Dried Apples.....	24	Small Hominy.....	50
Stone Coal.....	80	Pindars or Goobers.....	24
Plastering Hair.....	7	Cotton Seed.....	33
Barley Malt.....	34		

MISCELLANEOUS WEIGHTS, MEASURES, AND DISTANCES.

A ton of Coal is 2240 pounds; but retailers give only 2000 pounds.

A commercial bale of Cotton is 400 pounds.

A pack of Wool is 240 pounds.

A barrel of Flour weighs 220 pounds, gross.

"	Pork	"	350	"	"
---	------	---	-----	---	---

"	Rice	"	600	"	"
---	------	---	-----	---	---

"	Molasses	"	500	"	"
---	----------	---	-----	---	---

"	Liquor	"	400	"	"
---	--------	---	-----	---	---

A firkin of Butter	"	56	"	"
--------------------	---	----	---	---

A box 24x16 inches, 22 inches deep, contains 1 barrel.

"	16x16½	"	8	"	"	"	1 bushel.
---	--------	---	---	---	---	---	-----------

"	8x 8½	"	8	"	"	"	1 peck.
---	-------	---	---	---	---	---	---------

"	4x 4	"	4½	"	"	"	½ gallon.
---	------	---	----	---	---	---	-----------

"	4x 4	"	2½	"	"	"	1 quart.
---	------	---	----	---	---	---	----------

A circular measure, 18½ inches in diameter, and 8 inches deep, contains one bushel, dry measure.

231 cubic inches is 1 gallon, liquid measure.

268 4-5	"	"	1	"	dry	"
---------	---	---	---	---	-----	---

2150 2-5	"	"	1 bushel	"	"
----------	---	---	----------	---	---

A ton of round timber is 40 feet; of square timber 45 cubic feet.

A barrel of unslacked lime contains 3 bushels.

An English or Statute mile is 1760 yards, or 5280 feet.

A league is 3 miles.

A fathom is 6 feet.

A cubit is 2 feet.

A great cubit is 11 feet.

A pace is 3 feet.

A hand in horse measure is 4 inches.

A span is 10½ inches.

A palm is 3 inches.

An acre is 4840 square yards, or 69 yards, 1 foot, 8½ inches each way.

A square mile is 1760 yards each way, containing 640 acres.

To lay off a square acre of ground, measure 209 feet on each side, and you will have a square acre, within an inch.

RIVER LANDINGS IN ALABAMA.

THE MOBILE RIVER.

<i>Landings.</i>	<i>Dist.*</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Mobile.....	0	Lyon's.....	30	M'th Tensas River	43
Meaher's Wharf.....	3	Mrs. Acker's W'y'd	31	Cooper & Backers...	44
Live Oak.....	14	P. Dillard's.....	31	Arsenal Wharf or }	45
Dubroca.....	18	Seymour's Bluff.....	33	Ft. Stoddard.....	45
Storms.....	18	Chastang's Bluff.....	37	Simison's W'dy'd...	46
21 Mile Bluff.....	21	Sarah Marshall's...	38	Frank Davids.....	47
Dupree's.....	22	Roper's Woodyard.	38	Simison's Gin.....	48
24 Mile Bend.....	24	Cedar Creek.....	39	John M. Dabney's...	49
27 Mile Bluff.....	27	R. Chapman.....	39	H'd Mobile River...	50
28 Mile Bluff.....	28	Promised Land.....	41		

*All the distances are in Statute Miles, and as the Rivers run.

THE ALABAMA RIVER.

<i>Landings.</i>	<i>Dist.*</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Webb's.....	50	McDavid's W'dy'd.	90	John Slaughter's}	129½
James Godbold's...	54	Dean's.....	90	or Friar's.....	129½
McDaniel's.....	55	Driesbach's.....	90	John Slaughters es.	130
J. Booth, Jr.....	57	Sam Kelvins.....	91	J. Marshall's low'r.	131
Pierce's.....	60	J.C.Deas or Prince's	92	Dr. Lindsay's.....	131
Atkinson's.....	61	Tait's Shoals.....	93	Dale's Ferry.....	131½
Mrs. Flaut's.....	61½	R. H. Moore.....	94	Marshall's Gin.....	132
Steadham's.....	64	Stark's Woodyard..	95	G. W. File's.....	133
Montgomery Hill...	65	J. Boyle's W'dyard	98	Lorenzo James	134
Mrs. J. Booths.....	66	Mrs. Mathewson's...	101	James Hearin's.....	135
R. S. Moore's or }	68	Choctaw Bluff.....	104	R. H. Flynn's.....	136
L. J. Wilson's.....	68	Rice.....	105	Cedar Creek.....	137
Woodcock's or }	69	R. W. Smith's.....	106	Sam Forwards.....	137½
Wilkin's.....	69	Price's or Pott's...	108	Mrs. N. Harris.....	138
Cut-Off.....	70	Mount Pleasant.....	109	Wm. McAlpin's.....	140
S. P. Gray's.....	70½	Frank James' or }	110	Gosport.....	142
T. J. Booth's.....	71	R. D. James'....	110	Judge Gibbons'....	143
G. Hall.....	72	Kellum's or How- }	112	Scott's.....	144
T. Booth's Gin.....	72½	ard's.....	112	Portis Landing.....	145
Silvers' Woodyard.	73	Mrs. Erwin's.....	115	Claiborne.....	146
Dr. Belt's.....	74	Mrs. N. Jones'....	116	Wm. J. Hearin's....	146½
Singleton's.....	75	Carter's.....	119	Scott's Ferry.....	147
Dick Williams'.....	75	Gainestown.....	120	Mouth Lime Stone...	147½
Joe Silver's Gin...	76	Eureka.....	121	Joe Barefield's....	148
R. McDonald's....	78	California W'dy'd.	122	Lisbon.....	150
Mrs. Slaughter's...	78½	O. S. Jewett's.....	122½	D. Lees lower.....	151
Harry Davis.....	80	Ethridge's	124	T. H. Williams.....	152
Stedham's W'dy'd.	81	J. S. Lambert's....	124	J. B. Williams.....	153
Dr. Holmes.....	81½	Smith's or French's	125	Lee's.....	154
Joe Davis.....	81½	T. C. English's....	125	M. Stablers.....	154½
Sam Leggett.....	82	Jas. Bryant's.....	125	Hamilton's.....	156
Richard G. Davis...	82	Denard's Bluff....	125½	Marshall's Upper...	156
Sibley's.....	85	English's Woody'd	126	Presnall's.....	157
Mobley's.....	85	J. P. Flynn's.....	126	Doctor Maiben's....	157½
Mrs. H. G. Davis }	87	John English.....	126½	Jim Stabler's.....	158
or Ben Davis....	87	Lovett's.....	127	McCoy's Woody'd...	158½
James Earle's.....	88	Geo. Foster's....	128	Wm. Henderson's...	159
Frank Earle's....	89	Hollinger's.....	129	A. Williams lowr es	160

*From Mobile.

THE ALABAMA RIVER.—CONTINUED.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
A. Williams up e&w161		Dears Port.....206		W. P. Molett's.....263	
Arthur Foster's.....163		J. J. Longmire's.....206½		Providence.....263½	
M. Cobbs'.....164		Walnut Bluff.....206½		Elm Bluff.....265	
A. J. Kidd's.....164		F. K. Beck's.....208½		Coleman's.....266	
Legget's.....166		Erwin's upper.....209		W. L. Davis'.....269	
Davis' Ferry.....168		Curtis'.....209		Nunnalee's.....271	
J. G. Bradley's.....169		Watson's.....211		A. Davis' or Wood's.....276	
Hugh Bradley.....169		Clifton.....213½		Lenoir's Woodyard.....277	
Jno. McLeods low'r169½		Osage.....215		White Bluff.....279	
Johnson's W'dy'd.....170		Mendenhall's.....216		Chamblers.....280	
McDuffee's.....170½		W. T. Mathews'.....217		King's Landing.....282	
E. P. Morrisett's.....171		Pegues.....217½		T. M. Mathews.....286	
Stablers Gin.....171		Geo. Strothers.....218		J. E. Mathews.....287	
Wm. Bragg's.....171½		Piedgers.....219		Cahaba.....289	
F. S. Morrisett's.....172½		David Bethea's.....220		Cahaba Point.....289	
Blacks.....173		McMillan's.....221		Dukes.....289	
Bell's Landing.....174		Midway lower.....221		Dunham's.....291	
J. B. Powell's.....174½		Midway.....222		Sam. Hunter's.....292	
Ed. King's.....175		Hopkin's.....222		Hatcher's Bluff.....295	
David Packer's.....177		Mattie's Landing.....222½		Mrs. Givan's.....296	
Wm. King's W'y'd178½		Miller's Ferry.....224½		Cleveland's.....297	
Shoo Fly.....179		Prairie Bluff.....225		Monk's.....299	
Slip Up.....179		D. Smith's.....225½		King's Bend.....300	
Nettle's Woodyard179		H. L. Hobbs.....227		T. J. Cade's.....301½	
Carstaphney's Wyd180		McGuire's.....228		J. S. Hunter's.....303	
K. W. Wells'.....180½		Mixon's.....229		E. S. Jones'.....304	
Kennedy's.....181		C. Satterwhite's.....231		Selma.....308	
Peeble's Woody'd.....181½		Park's.....232		Tipton's.....309	
Lower Peach Tree.....183		Young's.....233		Kornegay's.....311	
McLeod's.....183		W. W. Irby's.....234		Tarver's.....314	
McLeod's Ferry.....184		T. K. Becks.....234½		Weaver's Woody'd316	
C. S. Powe.....185		Canton.....236		Frederick's.....317	
Dr. McIntosh's.....185½		Magnolia.....236½		Cunningham's.....321	
T. A. Powe's.....186		Peru.....237		Mrs. Bat. Smith's.....322	
Mrs. Mathew's Ldg187		W. K. Beck's.....238		V. H. Gardner.....325	
Mrs. Bryan's Gin.....187½		Mrs. Ellis.....240		Perry's.....326	
Yellow Bluff.....190		Jno. A. Jones.....241		Lamar's.....326	
Tait's Lower Ldg.....191		Hillsboro.....241½		Loves.....326½	
F. G. Foxworth } 192		Bridgeport.....242		Steel's Mill.....328	
or McNeill's.....}		A. Jones' Ferry.....243		Durant's Bend.....329½	
A. K. Smith's Wyd.193		Wilcox.....243½		John M. Minter.....332	
C. Dear's.....194		Carson's.....244		Morgan's.....332	
S. B. Mathew's upr.194½		Cochron.....245		G. L. Stewart.....333	
Ross.....196		Hurricane Bluff.....246		Wood's lower.....335	
L. W. Mason's.....196		Pettitway's.....246		Ellsberrees.....336	
Tait's middle.....197		Est. Oliver's.....249		Benton.....340	
Black's Bluff.....198		C. P. Irby's.....250		Fort Williamson.....342½	
Tait's Ferry.....198		A. M. Sprague's.....251		Knoxville.....343	
Felix Tait's upper.....199		Irby's Woodyard.....252		Cambell's Woody'd.344	
Geo. Gullett's Gin.....200		Lexington's.....253		D. A. Steele's.....345	
Eade's Ferry.....200½		Days.....254		Gresham's.....346	
Coal Bluff.....200½		Golsan's.....255		Wood's upper.....347	
Dr. Erwin's Low- } 201		H. H. Oliver.....255		Haralson's.....347	
er Landing.....}		Moseley's W'dy'd.....256		Jones' Bluff.....348	
Gullett's Gin.....202		McMillan's W'y'd.....257		L. Tyus'.....349	
Burford's.....203		John U. Molett's.....257		Steel's Gin.....350	
Robert Tait's.....203½		Boykins.....258		Pauline.....351	
Holley's.....204½		Portland.....260		House Bluff.....352	
Raiford's.....205½		M. J. Keenan's.....262		L. P. Edward's.....354	

THE ALABAMA RIVER.—CONTINUED.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Sam Stoudemire's.....	355	Gen. Fair's.....	375	Gause's.....	399
W. B. Hall's.....	355	W. D. Smith's.....	376	Montgomery.....	403
Dodson's.....	356	Tom Jones.....	377	Bolling Hall's.....	407
Cypress Creek.....	358	Tallawassee.....	378	A. B. Jackson's.....	415
Dutch Bend.....	358	Graves'.....	379	Coosawda.....	420
Brinson's	359	Mrs. Popes.....	380	Reeve's Gin.....	423
Autauga	363	C. Gunter's.....	381	Loftin's.....	424
Bonnell's Ferry... ..	365	Brevard's.....	383	C. M. Jackson's.....	425
Est. W. O. Nixon.....	366	Stone's.....	384	Fitzpatrick's.....	426
Vernon.....	366	Washington.....	388	Cain's.....	427
Nuns.....	367	Cottage Bluff.....	389	Bozeman's.....	430
Alexander's	369	Mrs. Turner's.....	391	Elmore's.....	431
DeBardeleben.....	370	Esperanza.....	392	Griffin's.....	435
Newport.....	372	Carpenter's W'y'd.....	393	Wetumpka.....	437
C. B. Robinson's ..	372	Whetstones.....	394		
Tatum's.....	374	H. Rose's.....	396		

THE TOMBIGBEE RIVER.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Head of Mobile Riv.	50	Jeffrie's or Singlet's	107	Williams' Gin.....	138½
Dickens' 52	} Nanna-hubba Bluff. 53½	Mouth Bassetts Ck.....	107½	B. A. Clantons	139
Calvert's 52		Blackwell's or R. } S. Tinker's.....	108	Rocks Bluff.....	139½
Greer's 53½		DuBose Plantat'n.....	109	Coffeeville.....	140
Burford's 53½		Jackson.....	110	Idalia.....	140½
Hollinger's	56½	Prince's Lower Lg.....	110	James Cox's Wyd.....	141
M. P. Johnson's.....	57½	Parker's.....	111	Secession.....	142
B. Meaher's L'ding	58	A. M. Wing's.....	111½	Hill's or Old Bladon	143
B. Meaher's Pl'n.....	59	Dubose's Woody'd.....	114	Thornton's lower.....	143
Burk's.....	60	Mouth Steve Creek.....	114½	Midway.....	144
M. P. Johnson's Pl'n	60	Prince's Upper.....	115	Short's or Hunter's.....	145
Hill's Gin.....	63	Luck Wainright's.....	115	Eli Thornton's.....	147
Wickwire's Gin.....	63	Woodward's	116	C. May's Woody'd.....	148
Wickwire's } McIn-	} intosh's Bluff. 65	St. Elmo	117	Poe's.....	149
Rush's.....		Stonewall.....	117½	Mrs. Turner's.....	149
Vaughan's.....		Mouth Jackson C'k	118	Mouth of Oakteppa	150
Woolsey's Gin.....	67	Cowan's	119	Philans.....	151
Three Rivers.....	69	St. Stephen's.....	120	Turner's Shoals.....	152
Three River Pl'n ..	69	Smith Malone's Gin	122	Elliott's.....	152
Slade's.....	70	Beckham's.....	123	Macons.....	152
Bull Pen.....	75	L. J. Wilson.....	125	Osage.....	152½
Frank Payne's.....	79	Fred Pevey's.....	127	J. W. Thornton's.....	153
Batcheller's.....	83	Dr. Coleman's.....	127	Seller's Woodyard.....	153
Oven Bluff.....	85	Atchison's Gin.....	128	J. W. Hinsons.....	153½
Sawyer's Gin.....	86	Blount's Gin.....	129	J. J. Martin's.....	154
Stalling's Shed	88	Hatchatigbee.....	130	Ferrel's.....	155
Salt Works	90	Buena Vista.....	131	Mitchell's W'dy'd.....	155½
R. C. Payne.....	92	Boykin's.....	132	Magnolia.....	156
Harrell's.....	93	Buck Williams'... ..	132	Joe Cowans.....	156
Hunter's.....	95	Malone's Gin.....	133	Cunningham's Gin	156
Mounger's.....	96	Cato's.....	134	Cunningham's w'd	156½
Bob Harwell's.....	98	Mrs. Bass'.....	134	T. Martin's.....	157
Carney's Bluff.....	100	Christmas.....	135	Davis Bluff.....	159
Austill's.....	100	Scott or Lampley's.....	136	Wood's Bluff.....	160
Geo. S. Gaines.....	101	Malone's W'dy'd.....	137	Beach Bluff.....	161
Daffin's or Marshl's	104	Pine Tree.....	137½	A. M. Granger's.....	163
Bassett's.....	105	H. R. Williams'... ..	138	McCarty's Ferry.....	164½
E. Y. Bowling's Wd	106			Cade Bend	167

THE TOMBIGBEE RIVER.—CONTINUED.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Campbell's Ldg.....	168	Tompkins' Bluff.....	197½	Black Bluff.....	223
John Pickens'.....	169	Nahiola.....	199	Mrs. Donald's.....	223
Barney's lower.....	171	Mrs. Kemp's.....	200	Hart's lower.....	224
Joe McCarty's.....	173	Breckinridge's Gin.....	201½	Dean's.....	226
Magnolia Bluff.....	175	Steiner's Landing.....	203	Chaney's lower.....	226
Democrat Bluff.....	175½	Cetahoma.....	205	J. N. Hart's.....	226
Mills' or Mouth	} 176	Oak Chi Bluff.....	206	Moscow.....	227
of Wahalak or		Poelnitz's.....	207	Vauter's.....	227
Morisett.....		N. Lewis.....	208	W. T. Chaney's.....	228
Tuscahoma.....	180	J. L. Terrell.....	208½	J. H. Woodward's.....	229
B. L. Turner's.....	181	Dr. Poelnitz's, Jr.....	209	Ellis' or Adams'.....	232
Barney's upper.....	183	Remberts.....	212	Barton's Bluff.....	233
Vinc'nt's or Barnes'.....	185	Bickley's.....	213	Pace's.....	234
Gay's.....	187	McNeils.....	213	Simmons'.....	235
A. Waters'.....	187	Dr. H. Hildreth's.....	214½	Smith's.....	237
Jacob Williams'.....	187½	Bryant Burns.....	215	G. G. Lyons lower.....	237
Lott's.....	189	Griffin's.....	216	Malakoff.....	237
Nanafalia.....	191½	A. M. Lewis.....	217	Railroad Bridge.....	238
J. B. Chaney's.....	191	Besteder's.....	217	McDowell's.....	239
J. C. Barron.....	192	Robinson's.....	218	Russell's.....	239
Cherokee.....	193	Chaney's upr Gin.....	219	Prout's.....	239
Mann's Landing.....	195	Marshall's W'y'd.....	220	G. G. Lyon's upr.....	240
Beaver Creek.....	196	Croom's Shoals.....	221½	Demopolis lower.....	242
Murphy's Bluff.....	197	Croom's Landing.....	222½	Demopolis upper.....	243

THE LITTLE TOMBIGBEE RIVER.*

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Tutt's, from Mobile.....	246	Dial's.....	283	Mobley's.....	322
Hancock's.....	247	McAlpin's.....	285	Hick's.....	322½
Green's.....	249	Smaw's.....	286	Est. of Carpenter's.....	323
Mat. Taylor's.....	250	Hanna's.....	287	Bracket's.....	323
Arringtons.....	250	Weedon's.....	288	Mrs. Walker's.....	324
Cole's.....	255	Mitchell's.....	288½	Carpenter's.....	325
Rowe's.....	257	Knight's.....	289	Mrs. Taylor's low'r.....	325½
T. Rowe's crib.....	259	Jones' Bluff.....	292	Craig's Ferry.....	325
Brassfield's Gin.....	259½	Miller's Bluff.....	295	Mrs. Taylor's up'r.....	325½
Kirkpatrick's.....	259	Hale's Gin.....	296	China Bluff.....	326
Forkland.....	260	Hay's Ferry.....	297	Clanton's Bluff.....	326
High's or E. Little's.....	263	Jehu Brown.....	299	Hellow.....	327½
Inge's.....	264½	Tom's Bluff.....	300	Warsaw.....	328
Durden's Ferry.....	265	Mixon's or Clay's.....	302	Gresham's W'dy'd.....	330
Jack Pharis.....	265	Cook's.....	304	Hutton's Old Ferry.....	330½
Sorsbys or Puckets.....	266	Trussel's Ferry.....	306	Jo. Little's Gin.....	332½
Pharis Gin or Pt. }.....	266½	Croft's.....	307	Hibler's.....	332½
Mingo.....		J. U. Brown's.....	308	Barnes' Gin.....	333
Muscle Shoals wyd.....	267½	Bohannan's.....	309	Childers'.....	334
Charletons.....	268½	Jolly Woodyard.....	309½	Burks.....	334½
Spring Bluff.....	270	Bee's Nest.....	311	Hill's.....	335
Bluff Port.....	274	Smith's.....	312	Conway's.....	337
Jackson or Morris'.....	276	Cherry Bluff.....	313	Mouth of Sipsey.....	340
Cedar Bluff.....	277	Collins.....	314	Vienna.....	343
Houston's.....	278½	Gainesville.....	315	Cuba.....	344
P. Williams'.....	279	Hill's.....	316	Halsey's.....	346
Garrett's Mills.....	280	Mouth of Noxubee.....	317	Windham's.....	347
Bragg's Bluff.....	280	Whitsitt's.....	318	Cat Fish Bend.....	349
Mrs. Phillips'.....	281	Smith's Ferry.....	320	Thomas' or Trant.....	} 357
Martan's Ferry.....	282	Dr. May's.....	320	ham.....	

*Mississippi Landings included.

THE LITTLE TOMBIGBEE RIVER.—CONTINUED.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Summerville	359	Lee's Gin.	388½	Collin's Woodyard.	440
Newport	360	Petty's Bluff.....	389	Colbert's.....	443
Jim Clanton's.....	360	Blewett's shed	390	Barton's Ferry	443½
Stone's Ferry.....	360	Nashville.....	392	Parker's Bluff.....	444
Fairfield.....	361	Union Bluff.....	393	Barton's	444
Hugh Windham.....	362	McCarty's Bluff. ...	394	Vinton's Ferry.....	445
Hines'.....	362½	Harvey's Bluff.....	397	Hamilton's old.....	453
Perkins'.....	363	Moore's Bluff.....	399	Allen's or Tatum's.	454
Crim's.....	365	Hairston's	400	Ogborne's	459
May's Mill.....	366	Lindsay's Ferry ..	408	Gore's	461
Isaac Taylor's shed.	366	Lowndesville.....	408	Vera Cruz	462
Memphis.....	369	Pinhook	409	Dan Willis	464
Carroway's.....	370	Mrs. Cox's W'yd.....	412	Saunders' or Tayl's	467
McFadden's	372	Erwin's.....	413	Jenkins' Woody'd.	467
Ringgold's Bluff...	373	Butler's.....	415	Lackays'	468
Jackson's Ferry ...	378	Neal's	418	N. Whitfields'.....	469
Goors	378	Law's	419	Strawhorns'.....	469
Holt's	379	Columbus, Miss.....	420	Martin's Bluff	469
Nance's Ferry	380	Westport	421	Aberdeen, Miss.....	470
Pickensville	381	Malone's Cotton S'd	423	Joe May's.....	473
Pullam's	381½	Plymouth	426	Parrsville.....	475
McLaran's	383	Barry's	430	Reynold's Bluff.....	476
Mouth of Coal Fire.	384	Burt's Gin	433	John Thompson's.	478
Pinkin Creek.....	384½	Waverly	434	Mullen's	479
Albert Cox's Shed.	388	Cox's Woodyard...	438	Cotton Gin Port. ...	480

THE BLACK WARRIOR RIVER.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Demopolis, from }	243	Sam Cowin's	292	Wilson's Bluff.....	350
Mobile.....	243	Erie.....	293	White's Bluff.....	355
Glover's Ferry.....	246	McAlpin's Ferry...	302	Steele's Bluff.....	358
Garner's W'dy'd.....	248	Eastport.....	305	Mike King's, or }	359
Wright's.....	251	Dobbins.....	307	Cut Off.....	
Factory.....	253	Jennie Watt's Bluff	312	Battle's Gin.....	360
Desha Smiths.....	255	Stephens' Bluff.....	318	Bissels.....	360
Rogeville.....	256	Choctaw Bluff.....	320	Williford's.....	360
Arcola.....	258	Taylor's.....	321	Mrs. Eddins'	360
Log Woodyard	260	Forrest Bridge.....	322	Mrs. Eddins' Gin...	361
Hatch's.....	263	Jenning's Ferry....	324	Burton's.....	363
Lime Kiln.....	264	Eutaw Landing.....	325	Gray's.....	364
A. J. Dunlap's.....	266	Finch's Ferry.....	328	Nick Prince's.....	365
Candy's.....	268	Sample's Bluff.....	329	Burrows.....	366
May's.....	269	Brown's Bluff.....	330	Mrs. Prince's.....	368
Drake's.....	270	Stave Bluff.....	331	John S. Beale's.....	368
Cherry Ridge.....	271	Jack Collins' W'yd.	332	O. T. Prince's.....	370
Little's.....	272	Chiles' Ferry.....	334	Rossers' Bluff.....	370
Arrington.....	275	Bartee's Bluff.....	335	McCowin's Bluff...	371
McDaniels.....	276	Brodnax's W'y'd....	335	Corbin's.....	371
Lake Bend.....	277	Merriwether's.....	336	Vancleave's.....	372
Clement's.....	279	Z. Logan's.....	338	R. H. Foster's.....	373
Holcroft's.....	280	Hickman's Bend. ...	340	Big Sandy.....	374
Myree's Bluff.....	281	Yellow Bluff.....	341	Dr. D. L. Foster's.	375
Port Royal.....	283	Leroy Logan's.....	342	D. M. Farmers.....	376
Millwood.....	285	Logan's Bluff.....	343	J. Collier Foster's.	377
Sam Duffey's.....	287	H. Colvin's.....	345	Cunningham's.....	377
Hines'.....	288	Eagle Bluff.....	347	King's Ferry.....	378
Owens'.....	290	Morrow's.....	348	Maxwell's.....	378
F. Snedecor's.....	291	Parham's Gin.....	349	Mrs. Jones'.....	379

THE BLACK WARRIOR RIVER.—CONTINUED.

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Maxwell's Gin.....	381	Gate's.....	394	Dobbs' Landing..	408
T. J. Hill's.....	382	Mrs. A. Owen's.....	395	Mrs. Cochran's e&w	408
Eddins'.....	383	R. Dunlap's.....	396	Perkins'.....	409
Nelson's.....	383	Robinson's.....	398	Dr. Hullum's.....	410
Wm. Lelands'.....	384	Sa'nder's Fe'ry e&w	399	Craddoe's.....	410
J. H. Foster's.....	385	L. M. Clemmens'.....	400	A. C. Hargrove.....	411
Bozeman's.....	386	Inge's Landing.....	400	Northport.....	412
Woolsey's Bluff...	387	Mrs. Marr's, e side..	401	Tuscaloosa.....	413
J. L. Foster's.....	388	Mrs. Marr's Gin ws	401	Bridge.....	413
Dr. Manley's.....	390	R. H. Clemmens'.....	404		
Foster's Ferry e&w	393	Carson's Bluff.....	406		

THE COOSA RIVER.*

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
State Line.....	40	Dublin.....	85	Coats Bend.....	131
Howells Cross	} 54	Centre.....	90	Turkey Town.....	137
Roads.....		Maple Grove.....	105	Gadsden.....	155
Cedar Bluff.....	75	Oak Hill.....	115	Greensport.....	185
Round Mountain...	80	Ball Play.....	122		

*Distances from Rome, Georgia. Only Alabama Landings given.

THE TENNESSEE RIVER.*

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Chickasaw ...	267	Cheathams Ferry...	284	Kellar's.....	294
Waterloo.....	269	Newport.....	284	Tuscumbia.....	295
Colberts' Shoals..	277	Cane Creek.....	286	Florence.....	300
Houston's.....	277	Boddies.....	287	M. & C.R.R. Bridge	300
Conner's.....	278	Foster's.....	289		
Georgetown.....	281	Pride's.....	290		

*Distances from Paducah, Ky., at Mouth of Tennessee River, 500 miles below Cincinnati. The Muscle Shoals obstructions prevent the continuous navigation of this river from its mouth to Chattanooga. Only Alabama Landings given.

THE TENNESSEE RIVER.*

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Bridgeport.....	60	McFarlane's.....	116	Whitesburg ..	165
Big Oak.....	65	Mannings.....	117	Leman's Ferry ..	171
Ridley's Ferry.....	67	Pine Island.....	119	Waldens.....	173
Cox's Mound.....	70	Laws.....	122	Draper's Ferry.....	174
Caperton's Ferry...	72	Hodges.....	124	Louis' Bluff.....	176
Rudder's Landing..	74	Henry's.....	126	Lees' Landing.....	177
McCoys.....	75	Loveless.....	128	Triana.....	181
Coffeys.....	79	McKee's.....	130	Watkin's Ferry.....	183
Bellefonte.....	85	Guntersville.....	132	Bluff City.....	185
Sublett's Ferry.....	87	Bakers.....	133	Brake's Branch.....	188
Hitches Ferry.....	91	Shuts.....	135	Rock House.....	190
Martins Landing...	95	Deposit.....	138	Daney's Landing..	191
Cheneys Landing...	96	Honey-Comb...	139	Mouth Limestone..	193
Pierces.....	100	Fosters.....	142	Decatur.....	199
Gossip's Ferry.....	101	Coles.....	144	Lucas' Ferry.....	202
Finney's Landing..	102	Wash.....	147	Brown's Landing..	211
Larkins Landing...	105	Hallowells.....	151	Garbrow's Landing	214
Granthams Ldg...	107	Clarksville.....	155	Milton's Bluff.....	218
Cabbitts.....	108	Bush's Landing...	156	Elk River.....	221
Grass.....	110	Black's Landing..	157	Lamb's Ferry.....	227
Cowleys.....	113	Davidson's Ldg....	160		
Romans.....	114	Churn's Landing...	163		

*Distances from Chattanooga. Only Alabama Landings given.

THE CHATTAHOOCHEE RIVER.*

<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>	<i>Landings.</i>	<i>Dist.</i>
Fort Gadsen, Fla..	15	Port Jackson.....	180	Eufaula.....	300
Slough, or Cut Off.	40	Bellvue.....	190	Florence.....	325
Iola.....	50	Haywood's.....	210	Jernigan.....	330
Ricoe's Bluff.....	75	Neals.....	215	Blufftown.....	350
Blountstown.....	85	Gordon.....	230	Banks.....	375
Alam Bluff.....	95	Columbia.....	245	Magruder's.....	375
Ocheesee.....	130	Howard's.....	260	Columbus, Ga.....	390
Chattahoochee.....	150	Fort Gaines.....	275		
Hawley's.....	170	Otho.....	285		

*Distances from Appalachicola, Fla., and Landings not confined to Alabama.

RAILROAD STATIONS IN ALABAMA.

THE ALABAMA CENTRAL RAILROAD.

<i>Stations.</i>	<i>Dist.*</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Selma.....	0	Uniontown.....	30	McDowell's ..	55
Junction	14	Fawnsdale.....	35	Coatopa.....	66
Vernon.....	18	Macon.....	42	Bennett's.....	73
Brown's.....	22	Van Dorn.....	46	Curl's.....	75
Tayloe's.....	26	Demopolis.....	50	York.....	81

*All the Railroad Distances are in Statute Miles.

THE ALABAMA GREAT SOUTHERN RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Chattanooga, Tenn	0	Greenwood.....	74	Carthage.....	213
Wauhatchie.....	6	Attalla.....	87	Akron.....	223
Morganville.....	12	Whitney.....	102	Eutaw.....	233
Trenton.....	18	Springville.....	115	Haysville.....	239
Rising Fawn.....	26	Trussville.....	129	Epp's.....	250
Sulphur Springs...	31	Irondale.....	137	Livingston.....	259
Valley Head.....	40	Birmingham ..	143	York.....	268
Fort Payne.....	51	Jonesboro.....	155	Toomsaba.....	282
Brandon's.....	56	Vance's.....	177	Meridian, Miss.....	295
Porterville.....	61	Kennedale.....	191		
Collinsville.....	65	Tuscaloosa.....	198		

*Stations not confined to Alabama.

THE EAST ALABAMA AND CINCINNATI RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Opelika.....	0	Lafayette.....		Buffalo.....	22
Junction.....					

THE MEMPHIS AND CHARLESTON RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Memphis, Tenn.....	0	Big Hill.....	79	Trinity.....	182
Buntyn.....	5	Chewalla.....	84	Decatur.....	188
White's.....	9	Corinth.....	93	Mooreville.....	195
Germantown.....	15	Burnsville.....	108	Madison.....	203
Bailey.....	20	I-u-ka.....	115	Huntsville.....	213
Collierville.....	24	Margerum.....	124	Brownsboro.....	224
Rossville.....	31	Dickson.....	127	Gurley's.....	230
Moscow.....	39	Cherokee.....	129	Paint Rock.....	234
Somerville, (branch).....	52	Barton.....	134	Woodville.....	238
LaGrange.....	49	Pride's.....	138	Larkinsville.....	249
Grand Junction.....	52	Tuscumbia.....	145	Scottsboro'.....	254
Saulsbury.....	57	Leighton.....	156	Bellefonte.....	259
64 Mile Siding.....	64	Town Creek.....	163	Fackler's.....	265
Middleton.....	69	Courtland.....	169	Stevenson.....	272
Pocahontas.....	74	Hillsboro.....	176	Chattanooga, Tenn.....	310

*Stations not confined to Alabama.

THE MISSISSIPPI, GAINESVILLE, AND TUSCALOOSA
RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Narkeeta, Miss.....	0	McDowell's.....	17	Gainesville, Ala.....	22
Ramsey's.....	10				

THE MOBILE AND ALABAMA GRAND TRUNK RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Mobile.....	0	Mount Vernon.....	29	Bigbee Bridge.....	59
Cleveland.....	9	Leona.....	39		
Cold Creek.....	20	Sunflower.....	50		

THE MOBILE AND GIRARD RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Columbus, Ga.....	0	Hurtville.....	35	Thomas.....	64
Girard.....	1	Guerrytown.....	40	Linwood.....	73
Fort Mitchell.....	10	Suspension.....	46	Troy, Ala.....	85
Seale.....	20	Chunnenuggee.....	50		
Hatchechubbee.....	26	Union Springs.....	55		

THE MOBILE AND OHIO RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Mobile, Ala.....	0	Deer Park.....	44	Okatibbee.....	130
Toulminville.....	3	Escawtapa.....	51	Meridian.....	135
Whistler.....	5	Bienville.....	57	Marion.....	140
Eight Mile.....	7	State Line.....	63	Lockhart.....	147
Kushla.....	11	Buckatunna.....	71	Lauderdale.....	153
Mauvilla.....	13	Winchester.....	77	Tamola.....	158
Oak Grove.....	14	Waynesboro.....	82	Narkeeta.....	164
Bell Air.....	16	Red Bluff.....	93	Ramsey.....	173
Chunchula.....	19	Shubuta.....	96	Fulton.....	179
Beaver Meadow.....	25	DeSoto.....	104	Gainesville.....	185
Langdon.....	30	Quitman.....	109	Sucarnochee.....	169
Sidney.....	31	Stonewall.....	117	Scooba.....	176
Citronelle.....	33	Enterprise.....	120	Wahalak.....	182

*Stations not confined to Alabama.

THE MOBILE AND OHIO RAILROAD.—CONTINUED.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Shuqulak.....	188	Okolona.....	261	Jackson, Tenn.....	386
Macon.....	198	Shannon.....	269	Carroll.....	394
Brooksville.....	206	Verona.....	275	Humboldt.....	403
Crawford.....	211	Tupelo.....	279	Trenton.....	414
Artesia.....	219	Salttillo.....	288	Dyer.....	421
Sessums'.....	223	Guntown.....	292	Rutherford.....	426
Starksville.....	224	Baldwin.....	297	Kenton.....	431
Cobbs.....	225	Booneville.....	309	Crockett.....	438
Columbus, Miss.....	232	Rienzi.....	317	Troy.....	442
Mayhew.....	224	Corinth.....	329	Union City.....	447
Tibbee.....	227	Ramer.....	341	Jordan.....	452
West Point.....	232	Falcon.....	346	Cayce.....	456
Muldon.....	241	Bethel.....	353	Moscow.....	459
Aberdeen.....	250	McNary.....	359	Clinton.....	464
Prairie.....	246	Henderson.....	369	Columbus, Ky.....	472
Egypt.....	254	Pinson.....	375		

THE MOBILE AND MONTGOMERY RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Blakely.....	13	Pensacola Junction	69	Greenville.....	141
Tensas.....	22	Pollard.....	72	Summit.....	146
Carpenter's.....	25	Brewton.....	80	Fort Deposit.....	151
Bay Minett.....	31	Castleberry.....	94	Calhoun.....	157
Dyas Creek.....	38	Sparta.....	100	Givhan's.....	160
Perdido.....	43	Evergreen.....	105	Letohatchee.....	164
Williams.....	51	Gravella.....	110	Gilmer's.....	169
Canoe.....	56	Garland.....	119	McGehee's.....	176
Evans' Mill.....	60	Georgianna.....	126	Montgomery.....	186
Miles'.....	64	Bolling.....	133		

THE MONTGOMERY AND EUFAULA RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Montgomery.....	0	Mitchell's.....	25	Midway.....	54
Oak Grove.....	10	Fitzpatrick's.....	28	Spring Hill.....	62
Perry's Mill.....	13	Thompson's.....	33	Batesville.....	66
Mathew's.....	21	Union Springs.....	40	Eufaula.....	81

THE NASHVILLE, CHATTANOOGA, AND ST. LOUIS
RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Bridgeport.....	29	Stevenson.....	39

*Only Alabama Stations given. Distances from Chattanooga.

THE NASHVILLE AND DECATUR RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
State Line.....	96	McDonalds'.....	115	Decatur.....	123
Elkmont.....	101	Harris.....	120		
Athens.....	110	M. & C. Junction.....	121		

*Distances from Nashville. Only Alabama Stations given.

THE NEW ORLEANS AND MOBILE RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Mobile, Ala.....	0	Ocean Springs.....	56	Lookout.....	104
Webb's Landing....	8	Biloxi.....	60	Rigolets	109
Fowl River.....	13	Harrison's.....	66	Lake Catharine.....	114
St. Elmo.....	19	Mississippi City....	69	Chef Menteur.....	120
Grand Bay.....	24	Scott's.....	76	Micheaud.....	127
Murray's.....	32	Pass Christian.....	82	Lee.....	131
East Pascagoula....	40	Bay St. Louis.....	88	Gentility.....	135
West Pascagoula....	43	Toulme.....	95	New Orleans, La... 140	
Bellefontaine	50	Grand Plain.....	100		

*Stations not confined to Alabama.

THE NEW ORLEANS AND SELMA RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Selma.....	0	Saltmarsh	10	Tucker	18
Hunter	6	Crawford	12½	Martin.....	21
Tait.....	8	Mitchell	15		

THE SAVANNAH AND MEMPHIS RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Opelika.....	0	Dadeville.....	30	Kellyton.....	53
Gold Hill.....	10	Sturdevant	40	Goodwater	60
Waverly	15	Salisbury.....	42		
Camp Hill.....	22	Alexander City.....	47		

THE SELMA, MARION, AND MEMPHIS RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Greensboro... ..	0	Marion... ..	21	Junction.....	35
New-Berne.....	8	Hamburg.....	28	Selma.....	49

THE SELMA, ROME, AND DALTON RAILROAD.*

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Selma, Ala.....	0	Childersburg	90	Tecumseh.....	170
Burnsville.....	9	Alpine.....	99	Pryor's.....	173
Plantersville.....	22	Talladega.....	109	Cave Springs	180
Maplesville.....	32	Munford	120	Rome, Ga.....	196
Randolph.....	40	Oxford.....	130	Plainville.....	209
Ashby.....	49	Anniston.....	132	Skelley's.....	215
Brierfield.....	51	Weaver's.....	139	Sugar Valley	221
Montevallo.....	55	Jacksonville.....	145	Stark's.....	231
Calera.....	63	Patona.....	156	Dalton, Ga.....	236
Columbiana.....	72	Amberson.....	162		
Wilsonville.. ..	82	Stonewall.....	168		

*Stations not confined to Alabama.

THE SOUTH AND NORTH ALABAMA RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Montgomery.....	0	Helena.....	78	Hanceville	139
Elmore.....	11	Brock's.....	83	Phelan's	146
Deatsville.....	18	Oxmoor.....	89	Milner's.....	151
Mountain Creek....	27	Birmingham	95	Wilhite's.....	159
Cooper's.....	33	Boyle's.....	100	Hartsell's	169
Lomax.....	43	Cunningham	108	Decatur.....	182
Jemison.....	51	Warrior.....	119		
Calera.....	62	Blount Springs.....	129		

THE VICKSBURG AND BRUNSWICK RAILROAD.

<i>Station.</i>	<i>Dist.</i>	<i>Station.</i>	<i>Dist.</i>	<i>Station.</i>	<i>Dist.</i>
Eufaula.....	0	White Oak.....	5	Clayton.....	13

THE WESTERN RAILROAD.

Montgomery to West Point, Georgia.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Montgomery, Ala...	0	Franklin.....	34	Auburn.....	59
Mt. Meigs.....	14	Cloughs	36	Opelika.....	66
Brown's.....	19	Chehaw.....	39	Cusseta	77
Shorters	23	Notasulga	46	West Point, Ga.....	88
Cowles.....	30	Loachapoka	52		

Montgomery to Selma.

Mortgomery.....	0	Burke's.....	14	Benton.....	31
Stone's	6	Lowndesboro	19	Wilson's	37
Manack.....	12	Whitehall.....	25	Selma.....	50

Opelika to Columbus, Georgia.

Opelika, Ala.....	0	Salem.....	10	Smith's.....	20
Yongsboro.....	3	Mott's.....	16	Columbus, Ga	29

POSTAL REGULATIONS AND RATES.

RATES OF POSTAGE.

The following will show the rates of postage on letters; also the postage on newspapers, books, pamphlets and all mailable matter to and from all parts of the United States.

LETTERS.	Each ½ oz.
Letters to any part of the U. S. Drop Letters—that is, letters mailed in a city, to be delivered elsewhere in the same city.....	3 cts.
Postal Cards to any part of the U. S.....	2 cts.
Registered letters are charged 10 cents in addition to the proper postage.	1 ct. each.

BOOKS, TRANSIENT NEWSPAPERS, MDSE, ETC.

For every ounce.	
Books, circulars, and other printed matter (including <i>transient</i> newspapers), seeds, cuttings, bulbs, roots and scions, in packages not exceeding 4 lbs. in weight, for each ounce or fraction thereof	1 ct.
Merchandise or samples, in packages not exceeding 4 lbs. in weight, for each ounce or fraction thereof.....	1 ct.
Newspapers, circulars and periodicals not exceeding 2 oz. in weight, deposited for <i>local</i> delivery.....	1 ct. each.
Exceeding 2 oz.....	2 cts. each

All matter not prepaid at letter rates must be so wrapped that it can be examined without destroying the wrapper, and must not contain any writing whatever, inside or outside, except the address; but samples may be numbered to correspond with the numbers in a descriptive letter. Glass, liquids, poisons, explosives and other dangerous matters are excluded.

POSTAGE ON NEWSPAPERS, MAGAZINES AND PERIODICALS TO SUBSCRIBERS.

The postage rates on all newspapers and periodical publications, *mailed from a known office of publication* or news agency and addressed to *regular subscribers* or news agents, are as follows:

On daily and weekly newspapers and periodical publications, and on newspapers and periodicals issued oftener than once a week, two [2] cents for each pound or fraction thereof.

On newspapers and periodicals issued less frequently than once a week, three [3] cents per pound or fraction thereof.

MONEY ORDERS.

Rates on money orders in U. S.: Not exceeding \$15, ten cents; over \$15 to \$30, fifteen cents; over \$30 to \$40, twenty cents; over \$40 to \$50, twenty-five cents. No fraction of cents to be introduced.

Money orders to Great Britain and Switzerland: Not exceeding \$10, twenty-five cents; over \$10 to \$20, fifty cents; over \$20 to \$30, seventy-five cents; over \$30 to \$40, one dollar; over \$40 to \$50, one dollar and twenty-five cents.

Money orders to Germany: Not exceed-

ing \$5, fifteen cents; over \$5 to \$10, twenty-five cents; over \$10 to \$20, fifty cents; over \$20 to \$30, seventy-five cents; over \$30 to \$40, one dollar; over \$40 to \$50, one dollar and twenty-five cents.

Money orders to Canada: Not exceeding \$10, twenty cents; over \$10 to \$20, forty cents; over \$20 to \$30, sixty cents; over \$30 to \$40, eighty cents; over \$40 to \$50, one dollar.

POSTAGE TO FOREIGN COUNTRIES.

The following table shows the rates of postage chargeable on letters and newspapers to the foreign countries and places named in alphabetical order.

LETTERS.	Not exceeding ½ ounce.	Newspapers.
Argentine Confederation..	15 cts.	4
Aspinwall.....	5	2
Austria.....	*5	2
Australia, via San Francisco	5	2
do via England.....	15	4
do via Brindisi.....	19	6
Belgium.....	*5	2
Bermuda, via New York...	5	2
Brazil, direct.....	10	4
Canada, Nova Scotia, Newfoundland, etc.....	3	†
Cape of Good Hope.....	*15	4
Chili, Bolivia, Ecuador and Peru.....	17	4
China, via Southampton...	*15	4
Denmark, via England....	*5	2
East Indies, via San Francisco	10	2
do via England....	*10	4
France.....	5	2
German States, via North German Union.....	*5	2
Great Britain and Ireland..	*5	2
Holland.....	*5	2
Hong Kong, Canton, Amoy, Swatow & Foochow, via San Francisco.....	10	2
Italy, via England.....	*5	2
Japan, via San Francisco..	5	4
Liberia.....	*15	4
Mexico.....	10	3
Norway and Sweden.....	*5	2
Portugal, via Southampton	*5	2
Russia, via England.....	*5	2
Shanghai, via San Francisco	5	2
Spain.....	5	2
Switzerland.....	*5	2
Turkey, Syria, etc.....	*5	2
Venezuela, by Am'n packet	10	3
do by British do	25	6
West Indies, direct.....	5	2
do (British) via St. Thomas or Havana...	13	4

The asterisk () indicates that the postage may be paid or not, at the option of sender of the letter.
†The newspaper postage to Canada is the same as that to any part of the United States.

POSTAL CARDS TO FOREIGN COUNTRIES.

American postal cards may be sent for an *additional* one-cent stamp to the following countries: Netherlands, Moldavia, Montenegro, Newfoundland, Norway, Poland, Portugal, Roumania, Russia, Servia, Spain, Sweden, Switzerland, Austria, Belgium, Denmark, Egypt, Germany, Great Britain and Ireland, Greece, Greenland, Holland, France, Italy, Turkey and Wallachia.

POSTOFFICES IN ALABAMA.*

Italics, County Seats: † Money Order Offices.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
† Abbeville.....	Henry.	Bean Rock.....	Marshall.
Aberfoil.....	Bullock.	Beaer Creek.....	Randolph.
Abernathy.....	Cleburne.	Beaver Creek.....	Dale.
Acron.....	Hale.	Beaver Dale.....	Lamar.
Addison.....	Tuscaloosa.	Beaverton.....	Lamar.
Ala. Furnace.....	Talladega.	Beaver Valley.....	St. Clair.
Alberton.....	Coffee.	Bellefonte.....	Jackson.
Albertville.....	Marshall.	Belle Mina.....	Limestone.
† Alexander City.....	Tallapoosa.	Belleville.....	Conecuh.
Alexandria.....	Calhoun.	Bell Factory.....	Madison.
Allen's Factory.....	Marion.	Bell's Landing.....	Monroe.
Allenton.....	Wilcox.	Bell's Mills.....	Cleburne.
Allsborough.....	Colbert.	Belmont.....	Sumter.
Almond.....	Randolph.	Bennettsville.....	Etowah.
Alpine.....	Talladega.	Benton.....	Lowndes.
† Andalusia.....	Covington.	Berkley.....	Madison.
Anderson Creek.....	Lauderdale.	Bermuda.....	Conecuh.
Andrews Institue....	DeKalb.	Bethany.....	Pickens.
† Annistown.....	Calhoun.	Bethel.....	Wilcox.
Anro.....	Lamar.	Beulah.....	Lee.
Antioch.....	Pickens.	Bevill's Store.....	Choctaw.
Apple Grove.....	Morgan.	Bexar.....	Marion.
Arbacoochee.....	Cleburne.	Bibb Mills Station...	Bibb.
Arbor Vitæ.....	Bullock.	Bibb Springs.....	Bibb.
Arcadia.....	Montgomery.	Bibbville.....	Bibb.
Argo.....	Jefferson.	Big Coon.....	Jackson.
Argus.....	Crenshaw.	Big Creek.....	Geneva.
† Arkadelphia.....	Walker.	† Birmingham.....	Jefferson.
Ashland.....	Clay.	Black Creek.....	Jefferson.
Ashville.....	St. Clair.	Black Oak.....	DeKalb.
Attala.....	Etowah.	Bladon Springs.....	Choctaw.
† Athens.....	Limestone.	Blake's Ferry.....	Randolph.
† Auburn.....	Lee.	Bloomfield.....	Madison.
Aurora.....	Etowah.	Bloomington.....	Chambers.
Autaugaville.....	Autauga.	† Blount Springs.....	Blount.
Avoca.....	Lawrence.	Blountsville.....	Blount.
Ayres.....	Jefferson.	Blue Lick.....	Franklin.
Baker's Hill.....	Barbour.	Blue Spring.....	Morgan.
Ball Flat.....	Cherokee.	Bluff City.....	Morgan.
Ball Play.....	Etowah.	Bluff Spring.....	Clay.
Balm.....	Blount.	Boiling Springs.....	Wilcox.
Bangor.....	Blount.	Boley Springs.....	Fayette.
Barlow Bend.....	Clarke.	Boligee.....	Greene.
Barnes' Cross Roads	Dale.	Bolling.....	Butler.
Barnesville.....	Marion.	Bon Secour.....	Baldwin.
Barr's Mill.....	Pike.	Borden Springs.....	Cleburne.
Barton.....	Colbert.	Boyd.....	Walker.
Bartonville.....	Walker.	Boyd's Switch.....	Jackson.
Basham's Gap.....	Morgan.	Bradford.....	Coosa.
Bashi.....	Clarke.	Bragg's.....	Lowndes.
Bass Station.....	Jackson.	Branchville.....	St. Clair.
Batesville.....	Barbour.	Brandon.....	DeKalb.
Baylor.....	Jefferson.	Brewton.....	Escambia.
Bay Minette.....	Baldwin.	Bridgeport.....	Jackson.
Bayou LaBatre.....	Mobile.	Bridgeeton.....	Shelby.
Beach Grove.....	Walker.	Bridgeville.....	Pickens.

*Compiled from the *United States Official Postal Guide*, for October, 1878.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Brock's Gap.....	Jefferson.	Chapel Hill.....	Chambers.
Broken Arrow.....	St. Clair.	Chepultepec.....	Blount.
Brooklyn.....	Conecuh.	Cherokee.....	Colbert.
Brooksville.....	Blount.	Chestnut Creek....	Chilton.
Broomtown.....	Cherokee.	Chickasabogue.....	Mobile.
Brown's.....	Dallas.	Chickasaw.....	Colbert.
Brownsborough...	Madison.	Childersburgh.....	Talladega.
Brown's Creek....	Winston.	China Grove.....	Pike.
Brownsville.....	Jefferson.	Chisenhall's Mills..	Jackson.
Bruceville.....	Bullock.	Choccolocco.....	Calhoun.
Brundidge.....	Pike.	Choctaw Corner....	Clarke.
Bruner.....	Calhoun.	Choctaw Bluff.....	Clarke.
Brush Creek.....	Perry.	Christannia.....	Randolph.
Buckeye.....	Clay.	Chub Hill.....	Franklin.
Buck Horn.....	Pike.	Chulafinnee.....	Cleburne.
Buck Snort.....	Fayette.	Chunchula.....	Mobile.
Buena Vista.....	Monroe.	Churubusco.....	Franklin.
Buffalo.....	Chambers.	Citronelle.....	Mobile.
Bulger's Mills.....	Tallapoosa.	Claiborne.....	Monroe.
Bull Mountain....	Marion.	Clanton.....	Chilton.
Bullock.....	Crenshaw.	Clay.....	Jefferson.
Burkville.....	Lowndes.	Clayhatchee.....	Dale.
Burleson.....	Franklin.	Clay Hill.....	Marengo.
Burnsville.....	Dallas.	Claysville.....	Marshall.
Burnt Corn.....	Monroe.	†Clayton.....	Barbour.
Bursonville.....	Monroe.	Clear Creek.....	Chilton.
Burton's Hill.....	Greene.	Clear Creek Falls...	Winston.
Butler.....	Choctaw.	Clement's Depot....	Tuscaloosa.
Butler Springs....	Butler.	Clifton.....	Wilcox.
Cahaba.....	Dallas.	Clinton.....	Greene.
Caldwell.....	St. Clair.	Clintonville.....	Coffee.
Calera.....	Shelby.	Clio.....	Barbour.
Calhoun.....	Lowndes.	Clopton.....	Dale.
Calhoun's Station...	Bullock.	Clough's Store.....	Macon.
Callierville.....	Chilton.	Cluttsville.....	Madison.
Cambridge.....	Dallas.	Coal Creek.....	Jefferson.
†Camden.....	Wilcox.	Coal Fire.....	Pickens.
Camp Hill.....	Tallapoosa.	Coatopa.....	Sumter.
Camp Smith.....	Colbert.	Coffee Springs.....	Geneva.
Camp Spring.....	Lawrence.	Coffeeville.....	Clarke.
Cane Creek.....	Calhoun.	Coffey's Store.....	Jackson.
†Carrollton.....	Pickens.	Cokerville.....	Monroe.
Carter's Store.....	Randolph.	Cold Water.....	Cleburne.
Carthage.....	Hale.	Coleta.....	Clay.
Castleberry.....	Conecuh.	Collier Creek.....	Winston.
Cave Spring.....	Fayette.	Collinsville.....	DeKalb.
Cedar Bluff.....	Cherokee.	Collirene.....	Lowndes.
Cedar Grove.....	Jefferson.	Coloma.....	Cherokee.
Cedar Plains.....	Morgan.	Columbia.....	Henry.
Cedar Ridge.....	Marshall.	†Columbiana.....	Shelby.
Cedar Springs.....	Cherokee.	Commerce.....	Conecuh.
Central Institute....	Elmore.	Concord.....	Lawrence.
Central Mills.....	Dallas.	Connersville.....	Jefferson.
†Centre.....	Cherokee.	Coosada Station....	Elmore.
Centre Hill.....	Limestone.	Copper Mines.....	Clay.
Centre Star.....	Lauderdale.	Corn House.....	Randolph.
Centreville.....	Bibb.	Cottondale.....	Tuscaloosa.
Chalk Bluff.....	Marion.	Cotton Hill.....	Barbour.
Channahatchee....	Elmore.	Cotton's Store.....	Elmore.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Cotton Valley	Macon.	Eden	St. Clair.
Cottonville	Marshall,	<i>Edwardsville</i>	Cleburne.
Cottonwood	Henry.	Elamville.....	Barbour.
Courtland	Lawrence.	<i>Elba</i>	Coffee.
Covington.....	Lauderdale.	Eldridge.....	Walker.
Cowle's Station.....	Macon.	Elizabeth.....	Coffee.
Cowpens.....	Tallapoosa.	Elkmont.....	Limestone.
Cox's Mill.....	Barbour.	Elmore.....	Elmore.
Coxville	Etowah.	Elyton.....	Jefferson.
Crane Hill.....	Cullman.	Emuckfaw	Tallapoosa.
Crawford.....	Russell.	Enon.....	Bullock.
Crewsville.....	Coosa.	Enterprise.....	Coffee.
Crittenden's Mills..	Dale.	Epps Station.....	Sumter.
Crooked Creek.....	Cullman.	Equality.....	Coosa.
Cropwell.....	St. Clair.	Escatawpa.....	Washington.
†Cross Plains.....	Calhoun.	Estill's Fork.....	Jackson.
Cross Trails.....	Coffee.	†Eufaula.....	Barbour.
Crossville.....	DeKalb.	Eureka.....	Talladega.
Cuba Station.....	Sumter.	† <i>Eutaw</i>	Greene.
† <i>Cullman</i>	Cullman.	† <i>Evergreen</i>	Conecuh.
Cureton's Bridge.....	Henry.	Fackler.....	Jackson.
Curl's Station.....	Sumter.	Fairfield.....	Covington.
Cusseta.....	Chambers.	Fairview	St. Clair.
† <i>Dadeville</i>	Tallapoosa.	Falkville.....	Morgan.
Daleville.....	Dale.	Farmersville.....	Lowndes.
Danville.....	Morgan.	Fatama.....	Wilcox.
<i>Daphne</i>	Baldwin.	Faunsdale.....	Marengo.
Davis Creek	Fayette.	<i>Fayette C. H.</i>	Fayette.
Davis Cross Roads..	Cherokee.	Fayettville.....	Talladega.
Daviston	Tallapoosa.	Fernvale.....	Tuscaloosa.
Davisville	Calhoun.	Ferryville.....	St. Clair.
Day's Mills.....	Bibb.	Fish Pond.....	Tallapoosa.
†Dayton	Marengo.	Fitzpatrick's.....	Bullock.
Dead Level.....	Clarke.	Flat Rock	Clay.
De Armersville.....	Calhoun.	Flinn's Mill.....	Hale.
† <i>Decatur</i>	Morgan.	Flint Hill.....	Clay.
Deer Head.....	DeKalb.	Flora.....	Bullock.
Deer Park.....	Washington.	† <i>Florence</i>	Lauderdale.
Deetsville.....	Elmore.	Floy	DeKalb.
Delta	Clay.	Forest Home.....	Butler.
†Demopolis.....	Marengo.	Forkland.....	Greene.
Dent.....	Walker.	Fort Bluff.....	Morgan.
DeSotoville.....	Choctaw.	Fort Deposit.....	Lowndes.
Detroit.....	Lamar.	Fort Mitchell.....	Russell.
Dick's Creek.....	Macon.	Fort Payne.....	DeKalb.
Dickson.....	Colbert.	Foster's.....	Tuscaloosa.
Dixon's Springs.....	Marengo.	Fox Creek.....	Randolph.
Dodsonville.....	Jackson.	Francisco.....	Jackson.
Dothen.....	Henry.	Francia.....	Pickens.
Douglasville.....	Escambia.	<i>Frankfort</i>	Franklin.
Dry Cove.....	Jackson.	Fredonia.....	Chambers.
Dublin.....	Fayette.	Friendship.....	Marshall.
Duck Springs.....	Etowah.	† <i>Gadsden</i>	Etowah.
Dudleyville.....	Tallapoosa.	Gainestown.....	Clarke.
Dumas' Store	Wilcox.	†Gainesville.....	Sumter.
Earle	Jefferson.	Gandy's Cove.....	Morgan.
Easonville.....	St. Clair.	Garden.....	Pickens.
Easta Roga.....	Talladega.	Garden City.....	Blount.
Echo	Dale.	Garland	Butler.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Garrison Point.....	Walker.	Harmonius.....	Jackson.
Garth.....	Jackson.	Harpersville.....	Shelby.
Gaston.....	Sumter.	Harris.....	Barbour.
Gaylesville.....	Cherokee.	Harrisburgh.....	Bibb.
Gay's Landing.....	Marengo.	Harris Station.....	Limestone.
<i>Geneva</i>	Geneva.	Hartsell's.....	Morgan.
Georgiana.....	Butler.	Hatchchubbee.....	Russell.
Germania.....	Calhoun.	Havana.....	Hale.
Gibsonville.....	Clay.	Hawkinsville.....	Barbour.
Gilbertsborough.....	Limestone.	Haw Ridge.....	Dale.
Glen Allen.....	Fayette.	Hayes'.....	Tuscaloosa.
Glennville.....	Barbour.	Hayes' Store.....	Madison.
Glover's Ferry.....	Jefferson.	<i>Hayneville</i>	Lowndes.
Gold Hill.....	Lee.	Haysville.....	Greene.
Gold Mine.....	Marion.	Hazel Green.....	Madison.
Goldville.....	Tallapoosa.	Headland.....	Henry.
Good Hope.....	Elmore.	†Helena.....	Shelby.
Good Springs.....	Limestone.	Helicon.....	Crenshaw.
Good Water.....	Coosa.	Henderson.....	Pike.
Gordo.....	Pickens.	Hendrick.....	Blount.
Gordon.....	Henry.	Henrys ville.....	Marshall.
Gordonsville.....	Lowndes.	Hewitt.....	Walker.
Goshen Hill.....	Pike.	Hickman's.....	Tuscaloosa.
Gosport.....	Clarke.	Hickory Flat.....	Chambers.
Grafton.....	Henry.	High Falls.....	Geneva.
Grand Bay.....	Mobile.	Highland.....	Shelby.
Grantley.....	Cleburne.	High Shoals.....	Randolph.
Grantville.....	Cherokee.	Hightower.....	Cleburne.
Gravella.....	Conecuh.	Hillabee.....	Clay.
Gravelly Spring.....	Lauderdale.	Hillian's Store.....	Marshall.
Gray's Chapel.....	Jackson.	Hilliardsville.....	Henry.
Greenbrier.....	Limestone.	Hillsborough.....	Lawrence.
Green Grove.....	Madison.	Hoboken.....	Marengo.
Green Hill.....	Lauderdale.	Hookes' Bluff.....	Etowah.
Green Pond.....	Bibb.	Holly Grove.....	Walker.
† <i>Greensborough</i>	Hale.	Holly Tree.....	Jackson.
Greensport.....	St. Clair.	Honoraville.....	Crenshaw.
Green Springs.....	Hale.	Hooper's Mills.....	Cleburne.
† <i>Greenville</i>	Butler.	Hope Hull.....	Montgomery.
Greenwood.....	Etowah.	<i>Houston</i>	Winston.
Grove Cottage.....	Perry.	Howell's Cross R'ds	Cherokee.
<i>Grove Hill</i>	Clarke.	Hull.....	Tuscaloosa.
Grove Oak.....	DeKalb.	† <i>Huntsville</i>	Madison.
Guerryton.....	Bullock.	Hurricane Bayou.....	Baldwin.
Gum Pond.....	Lawrence.	Hurtville.....	Russell.
Gum Spring.....	Blount.	Idaho.....	Clay.
<i>Guntersville</i>	Marshall.	Ider.....	DeKalb.
Gurleysville.....	Madison.	Ingleside.....	Limestone.
Hackneyville.....	Tallapoosa.	Ireland Hill.....	Marion.
Haden's.....	Madison.	Ironville.....	Perry.
Haleborough.....	Hale.	Island Home.....	Tallapoosa.
Haley's.....	Marion.	Isney.....	Choctaw.
Hamburgh.....	Perry.	Iwana.....	Coosa.
Hampden.....	Marengo.	Jackson.....	Clarke.
Hanby's Mills.....	Blount.	Jackson's Gap.....	Tallapoosa.
Hanceville.....	Blount.	† <i>Jacksonville</i>	Calhoun.
Handy.....	Fayette.	Jamison.....	Chilton.
Hanover.....	Coosa.	<i>Jasper</i>	Walker.
Harlan.....	Clay.	Jayvilla.....	Conecuh.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Jefferson.....	Marengo.	Littlesville.....	Winston.
Jefferson Mines	Jefferson.	Little Warrior.....	Blount.
Jena.....	Tuscaloosa.	L vely.....	Russell.
Jenkins.....	Calhoun.	Live Oak.....	Crenshaw.
Jericho.....	Perry.	† <i>Livingston</i>	Sumter.
Jernigan.....	Russell.	† <i>Loachapoka</i>	Lee.
Jewell.....	Lamar.	Lomax.....	Chilton.
Jonesborough.....	Jefferson.	Long Island.....	Jackson.
Jones' Chapel.....	Cullman.	Longview.....	Shelby.
Jones' Cross Roads.....	Tallapoosa.	Looxapalila.....	Lamar.
Kansas.....	Walker.	Loraine.....	Coosa.
Kelly's Creek	St. Clair.	Lot.....	Marshall.
Kellyton.....	Coosa.	Louisa.....	Randolph.
Kemp's Creek.....	Cleburne.	Louisville	Barbour.
Kempsville.....	Monroe.	Lower Peach Tree.....	Wilcox.
Kennamer Cove.....	Marshall.	Lowndesborough.....	Lowndes.
Keysburgh.....	Etowah.	Luther's Store.....	Marengo.
Kings.....	Barbour.	McCalla.....	Jefferson.
Kings Landing.....	Dallas.	McConnell's.....	Tuscaloosa.
Kingston.....	Autauga.	McIntosh's Bluff.....	Washington.
Kingville.....	Lamar.	McKinley.....	Marengo.
Kinlock.....	Lawrence.	McKnight's.....	Chambers.
Kirby's Creek.....	Jackson.	Macon Station.....	Hale.
Kirk's Grove.....	Cherokee.	Madison Cross R'ds.....	Madison.
Knoxville.....	Greene.	Madison Station.....	Madison.
Kowaliga.....	Elmore.	Magnolia	Marengo.
Kymulga.....	Talladega.	Magnolia Plantat'n.....	Baldwin.
Lacey's Spring	Morgan.	Mahan.....	DeKalb.
Ladiga.....	Calhoun.	Manningham.....	Butler.
† <i>La Fayette</i>	Chambers.	Maple Grove.....	Cherokee.
Lake View.....	Covington.	Maplesville.....	Chilton.
Lamar.....	Randolph.	Marble Valley.....	Coosa.
Lamberta.....	Baldwin.	Marcumville.....	Tuscaloosa.
Landersville.....	Lawrence.	† <i>Marion</i>	Perry.
Lane's Mills.....	Winston.	Marion Junction.....	Dallas.
Langston.....	Jackson.	Marshall.....	Calhoun.
LaPlace.....	Macon.	Martin's Cross R'ds.....	Calhoun.
Larissa.....	Winston.	Martin's Station.....	Dallas.
Larkin's Fork.....	Jackson.	Marvyn.....	Russell.
Larkinsville.....	Jackson.	Mathews.....	Montgomery.
Lawrence Cove.....	Morgan.	Maynard's Cove	Jackson.
Lawrenceville.....	Henry.	Maysville.....	Madison.
<i>Lebanon</i>	DeKalb.	Mechanicsville.....	Lee.
Leesburgh.....	Cherokee.	Melior Valley.....	Clay.
Leighton.....	Colbert.	Melton's Mills.....	Tallapoosa.
Leled Lane.....	Tuscaloosa.	Meltonsville.....	Marshall.
Leon.....	Crenshaw.	Memphis,	Pickens.
Letohatchee.....	Lowndes.	Meridianville.....	Madison.
Level Road.....	Randolph.	Middleton.....	Walker.
Lewis.....	Shelby.	Midway.....	Bullock.
Lewis' Station.....	Escambia.	Miller's Stand.....	Winston.
Lexington.....	Lauderdale.	Millport.....	Lamar.
Lincoln.....	Talladega.	Millry.....	Washington.
† <i>Linden</i>	Marengo.	Milltown.....	Chambers.
Lineburgh.....	Pickens.	Milner.....	Randolph.
Lineville.....	Clay.	Milo.....	Pike.
Linwood.....	Pike.	Minter.....	Dallas.
Lisbon.....	Jefferson.	Mitchell's Station.....	Bullock.
Little Oak.....	Pike.	† <i>Mobile</i>	Mobile.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Monroeville.....	Monroe.	Newton.....	Dale.
Mont Calm.....	Fayette.	Newtonville.....	Fayette.
Monterey.....	Butler.	New Topia.....	Barbour.
†Montevallo.....	Shelby.	Newton Academy...	Monroe.
†MONTGOMERY*.....	Montgomery.	Nicholson's Gap.....	DeKalb.
Moore's Bridge.....	Tuscaloosa.	Nicholson's Store...	Choctaw.
Mooreville.....	Limestone.	Nixburgh.....	Coosa.
Morganburgh.....	Morgan.	North Creek.....	Fayette.
Morgan Spring.....	Perry.	Northport.....	Tuscaloosa.
Morganville.....	Lowndes.	North River.....	Tuscaloosa.
Morris.....	Jefferson.	Notasulga.....	Macon.
Morrowville.....	Dallas.	Oakfuskee.....	Cleburne.
Morvin.....	Clarke.	Oak Grove.....	Perry.
Moscow.....	Lamar.	Oak Hill.....	Etowah.
Moss Side.....	Marengo.	Oak Land.....	Lauderdale.
Mott's Mill.....	Lee.	Oak Level.....	Cleburne.
†Moulton.....	Lawrence.	Oakley.....	Montgomery.
Mountain Creek.....	Chilton.	Oak Lone.....	Cleburne.
Mountain Home.....	Lawrence.	Oakmulgee.....	Perry.
Mount Andrew.....	Barbour.	Oak Ridge.....	Jefferson.
Mount Carmel.....	Montgomery.	Oakville.....	Lawrence.
Mount Hebron.....	Greene.	Oaky Streak.....	Butler.
Mount Hilliard.....	Bullock.	Octagon.....	Marengo.
Mount Hope.....	Lawrence.	Odenville.....	St. Clair.
Mount Ida.....	Crenshaw.	Ogee.....	Blount.
Mount Level.....	Bullock.	Olaville.....	Limestone.
Mount Lookout.....	St. Clair.	Old Spring.....	Marengo.
Mount Meigs.....	Montgomery.	Oleander.....	Marshall.
Mount Olive.....	Coosa.	Olio.....	St. Clair.
Mount Pinson.....	Jefferson.	Olmsted Station.....	Tuscaloosa.
Mount Pleasant.....	Monroe.	Olney.....	Pickens.
Mount Polk.....	Calhoun.	Olustee Creek.....	Pike.
Mount Roszell.....	Limestone.	Omaha.....	Randolph.
Mount Sterling.....	Choctaw.	†Opelika.....	Lee.
Mount Vernon.....	Mobile.	Oregon.....	Jefferson.
Mount Willing.....	Lowndes.	Oregonia.....	Tuscaloosa.
Mulberry.....	Autauga.	Orion.....	Pike.
Munford.....	Talladega.	Orrville.....	Dallas.
Murphree's Valley...	Blount.	Osanippa.....	Chambers.
Musgrove.....	DeKalb.	Oswichee.....	Russell.
Mush Creek.....	Dallas.	Otho.....	Henry.
Nahiola.....	Choctaw.	Oto.....	Talladega.
Nanafalia.....	Marengo.	Owen's Cross R'ds...	Madison.
Nectar.....	Blount.	†Oxford.....	Calhoun.
Nelsonville.....	Franklin.	Oxmoor.....	Jefferson.
Nesmith.....	Cullman.	†Ozark.....	Dale.
Nettleborough.....	Clarke.	Paint Rock.....	Jackson.
Newbern.....	Hale.	Palestine.....	Cleburne.
Newburgh.....	Franklin.	Palmetto.....	Pickens.
New Castle.....	Jefferson.	Palo.....	Fayette.
New Hope.....	Madison.	Park's Store.....	Jackson.
New Lexington.....	Tuscaloosa.	Partridge.....	Jefferson.
†New Market.....	Madison.	Pearce's Mills.....	Marion.
New Marrs.....	Bibb.	Pea Ridge.....	DeKalb.
New Moon.....	Cherokee.	Pea River.....	Barbour.
New Providence.....	Crenshaw.	Pearson's Mills.....	Madison.
New River.....	Fayette.	Peek's Hill.....	Calhoun.
New Site.....	Tallapoosa.	Pelham.....	Shelby.
		Perdido.....	Baldwin.

*State Capital.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Perdido Station.....	Baldwin.	River Bend.....	Bibb.
Perdue Hill.....	Monroe.	River Mills.....	Dale.
Perote	Bullock.	Roanoke.....	Randolph.
Perryville.....	Perry.	Robbins' Cross R'ds.	Jefferson.
Pettusville.....	Limestone.	Rock Creek.....	Colbert.
Phipps.....	Hale.	Rockdale.....	Randolph.
Pickensville.....	Pickens.	<i>Rockford</i>	Coosa.
Pigeon Creek.....	Butler.	Rock Mills.....	Randolph.
Pike Road.....	Montgomery.	Rocky Mount.....	Clay.
<i>Pikeville</i>	Marion.	Rocky Plains.....	Winston.
Pilgrim's Rest.....	Fayette.	Rodentown.....	DeKalb.
Pinkneyville.....	Clay.	Rogersville.....	Lauderdale.
Pine Apple.....	Wilcox.	Rome.....	Covington.
Pine Forest.....	St. Clair.	Romulus.....	Tuscaloosa.
Pine Hill.....	Wilcox.	Rosebud.....	Wilcox.
Pine Level.....	Montgomery.	Rose Hill.....	Covington.
Pine Springs.....	Lamar.	Rosewood.....	Cleburne.
Pine Tucky.....	Perry.	Round Mountain.....	Cherokee.
Pineville.....	Marengo.	Round Pond.....	St. Clair.
Plano	Cherokee.	Rural	Clarke.
Plantersville.....	Dallas.	Russellville.....	Franklin.
Pleasant Gap	Cherokee.	<i>Rutledge</i>	Crenshaw.
Pleasant Grove.....	Pickens.	Ryan Creek.....	Cullman.
Pleasant Hill.....	Dallas.	St. Clair.....	Lowndes.
Pleasant Ridge.....	Greene.	St. Elmo.....	Mobile.
Pleasant Site.....	Franklin.	Saint's Store.....	Colbert.
Plevna.....	Madison.	St. Stephens.....	Washington.
Point Clear.....	Baldwin.	Salem.....	Lee.
<i>Pollard</i>	Escambia.	Sal Soda	Crenshaw.
Pondville.....	Bibb.	Saluda.....	Lamar.
Poplar Ridge	Madison.	Sand Lick.....	Colbert.
Portersville.....	DeKalb.	Sand Mountain.....	DeKalb.
Portland.....	Dallas.	Sand Rock.....	Cherokee.
Pottersville.....	Pike.	Sand Tuck.....	Elmore.
Prairie Bluff.....	Wilcox.	Sandy Ridge	Lowndes.
† <i>Prattville</i>	Autauga.	Santa.....	Jackson.
Pride's Station	Colbert.	Sapps' Cross Roads.....	Blount.
Princeton.....	Jackson.	Saville.....	Crenshaw.
Propell.....	Shelby.	Sawyer'sville	Hale.
Providence.....	Pickens.	† <i>Scottsborough</i>	Jackson.
Pushmataha.....	Choctaw.	Scott's Station.....	Perry.
Rabbit Town.....	Calhoun.	Scottsville.....	Bibb.
Radford'sville.....	Perry.	<i>Seale's Station</i>	Russell.
Raif Branch.....	Montgomery.	Seaton.....	Talladega.
Ramer.....	Montgomery.	Sedan.....	Wilcox.
Ramsey.....	Sumter.	† <i>Selma</i>	Dallas.
Randolph.....	Bibb.	Sepulga	Conecuh.
Rawhide.....	Lauderdale.	Shackleville.....	Butler.
Red Apple.....	Marshall.	Sharon.....	Chambers.
Red Bud.....	Etowah.	Sheffield.....	Fayette.
Red Hill.....	Marshall.	Shelby Iron Works.....	Shelby.
Red Level.....	Covington.	Sherman.....	Sumter.
Reeder's Mill.....	Barbour.	Shiloh.....	Marengo.
Reform.....	Pickens.	Shinbone.....	Clay.
Rehoboth.....	Wilcox.	Shirley.....	Covington.
Reid's Gap.....	Walker.	Shoal Creek.....	Cleburne.
Richmond.....	Dallas.	Shorter's Depot	Macon.
Ringgold.....	Cherokee.	Shortersville	Henry.
Rising Sun.....	Walker.	Shottsville	Marion.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Shulough.....	Walker.	Tecumseh	Cherokee.
Siluria	Shelby.	Tensaw.....	Baldwin.
Silver Run.....	Talladega.	Terrapin Hill	Coosa.
Sipsey Turnpike.....	Tuscaloosa.	Texas	Marion.
Sistrunk	Macon.	Thomas' Station.....	Bullock.
Six Mile.....	Bibb.	Thompson.....	Bullock.
Skipperville	Dale.	Thorn Hill	Marion.
Slate Hill.....	Randolph.	Three Notch.....	Bullock.
Slater's Landing.....	Choctaw.	Tilden	Dallas.
Smallwood.....	Tuscaloosa.	Tionus	Bibb.
Smith's Station	Lee.	Toad Vine.....	Jefferson.
Smithville.....	Henry.	Toledo.....	Fayette.
Snowdown.....	Montgomery.	Toll Gate.....	Marion.
Snow Hill.....	Wilcox.	Tompkinsville.....	Choctaw.
Society Hill	Macon.	Town Creek.....	Lawrence.
Solomon's Mills.....	Barbour.	Traveller's Rest	Coosa.
Somerville	Morgan.	Trenton.....	Jackson.
Southern	Marshall.	Triana.....	Madison.
South Florence.....	Colbert.	Trinity Station.....	Morgan.
South Hill.....	DeKalb.	Trout Creek.....	St. Clair.
South Lowell.....	Walker.	† Troy.....	Pike.
Sowell	Conecuh.	Trussville	Jefferson.
Sparta.....	Conecuh.	Tryan.....	Coffee.
Spencer.....	Fayette.	Tusahoma.....	Choctaw.
†Spring Garden	Cherokee.	†Tuscaloosa.....	Tuscaloosa.
Spring Hill.....	Mobile.	†Tuscumbia.....	Colbert.
Spring Valley.....	Colbert.	†Tuskegee.....	Macon.
Springville	St. Clair.	Uchee	Russell.
Spruce Pine	Franklin.	Union.....	Greene.
Star Hill	Barbour.	†Union Springs.....	Bullock.
Statesville.....	Autauga.	†Uniontown.....	Perry.
Steel's Depot.....	St. Clair.	Valhermosa Sprigs.....	Morgan.
Sterling.....	Cherokee.	Valley Head.....	DeKalb.
Sterrett.....	Shelby.	Valley Mines.....	DeKalb.
†Stevenson	Jackson.	Van Dorn.....	Marengo.
Stewart's Station	Hale.	Vashti.....	Clarke.
Stewartsville	Coosa.	Verbena.....	Chilton.
Stockton	Baldwin.	Vernon.....	Lamar.
Stone	Pickens.	Victoria	Coffee.
Stone Hill.....	Cleburne.	Vienna.....	Pickens.
Stonewall	Cherokee.	Village Springs.....	Blount.
Strasburgh.....	Chilton.	Villula	Russell.
Strata.....	Crenshaw.	Viola.....	Blount.
Sturdevant.....	Tallapoosa.	Waco.....	Franklin.
Suggsville	Clarke.	Wacoochee.....	Lee.
Summerfield	Dallas.	Waldo.....	Talladega.
Summit.....	Blount.	Walnut Grove.....	Etowah.
Sumterville	Sumter.	Walnut Hill.....	Tallapoosa.
Suspension	Bullock.	Warren's Store.....	Hale.
Sweet Water	Marengo.	Warrenton.....	Marshall.
Sycamore	Talladega.	Warrior Stand.....	Macon.
Sykes' Mills.....	Elmore.	Warrior Station	Jefferson.
Sylacauga.....	Talladega.	Warsaw	Sumter.
Sylvan	Tuscaloosa.	Waterloo.....	Lauderdale.
†Talladega	Talladega.	Waverly.....	Lee.
Tallahatta.....	Clarke.	Weaver's Station.....	Calhoun.
Tannehill	Tuscaloosa.	Webster.....	Fayette.
Tayloe's Station.....	Perry.	Wedowee.....	Randolph.
Taylor's.....	Geneva.	Wehoga	Cleburne.

POSTOFFICES IN ALABAMA.—CONTINUED.

<i>Name.</i>	<i>County.</i>	<i>Name.</i>	<i>County.</i>
Weogufka	Coosa.	Williams Station.....	Escambia.
Wetona.....	Jefferson.	Wilmington.....	Walker.
† Wetumpka.....	Elmore.	Wilson.....	Escambia.
Wheeler Station.....	Lawrence.	Wilsonville.....	Shelby.
Whistler	Mobile.	Windham's.....	Pickens.
White Cloud.....	Clay.	Wolf Creek.....	St. Clair.
White Hall.....	Lowndes.	Woodland Mills	Morgan.
White Oak Springs..	Barbour.	Wood's Bluff.	Clarke.
White Plains.....	Calhoun.	Wood's Station.....	Jefferson.
White Pond.....	Barbour.	Woodstock.....	Bibb.
Whitesburgh.....	Madison.	Woodville.....	Jackson.
Whiting.....	Escambia.	Wooten.....	Blount.
Whitney	St. Clair.	Wyr nville.....	Blount.
Whiton.....	DeKalb.	Yongsboro.....	Lee.
Wilbourne.....	Jackson.	York.....	Walker.
Williams' Mill.....	Covington.	York Station.....	Sumter.

Omission.

THE SELMA AND GULF RAILROAD.

<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>	<i>Stations.</i>	<i>Dist.</i>
Selma	0	King's Landing.....	15	Minter's	25
Cleveland	6	Pleasant Hill.....	20	Snow Hill.	30
Jones'	8	Warrenton	21	Allenton.....	35
Mush Creek.....	12	Dawson's.....	23	Pine Apple.....	40

INDEX.

Abbreviations, names States and Territories	308
Actions, Civil.....	40
Agricultural and Mechanical College	58 61
Agricultural Advantages, Alabama.....	248-55
Capabilities, Alabama.....	248-55
Divisions, Alabama.....	248 55
Alabama, Agricultural and Mechanical College.....	58-61
Agricultural Advantages.....	248-55
Agricultural Capabilities.....	248-55
Agricultural Divisions.....	248-55
Altitudes in.....	306
Area of	2
Books descriptive of	306
Boundaries of	1-2
Cities of	3
Climate of.....	284-93
Coal of	256-59
Coal Mines of.....	259-62
Collectors Customs in.....	302
Collectors Revenue in.....	302
Colleges.....	53
Congressmen.....	302
Congressional Districts.....	307
Constitution of.....	<u>IX-XXXIX</u>
Consuls in	303
Cotton Manufacturing in.....	268-76
Cotton Mills.....	277-78
Counties.....	21, 303
County Seats.....	21, 303
Deaf, Dumb and Blind Institute.....	61-3
Debt of.....	305
Election Laws.....	25-6
Executive Department.....	14-16, 298
Executive Officers	14-16, 298
Express Facilities.....	128
Federal Judges in.....	302
Fish of	281
Forests of.....	221-35
Game of.....	281
General Assembly.....	14, 299-302
Geology of.....	129-196
Government of.....	12, 298-302
Grasses of.....	236-47
Health of	284-93
Historical Chronology of.....	4-11
Histories of.....	306
Important Statutes of.....	35-43
Indians of.....	11
Insane Hospital.....	65-8
Iron of.....	262-65
Iron Works of.....	265-67
Islands of.....	2
Judicial Power of.....	16-21
Judicial Officers.....	298-99

Alabama, Land Officers in.....	302
Land Districts in.....	302
Landings in.....	310-16
Latitude of.....	2
Legislative Department.....	14, 299-302
Legislature, Members of.....	299-302
License Laws.....	32-35
Lime of.....	279
Lime Works.....	279-80
Lines, Water Transportation.....	89-113
Longitude of.....	2
Medical College.....	63-5
Mineral Springs.....	293-4
Mineral Waters.....	293-4
Money Order Offices.....	128, 322-30
Mountain Ranges of.....	2
Name of.....	1
Newspapers in.....	304
Normal Schools of.....	50-2
Penitentiary.....	68-72
Political Divisions of.....	24-5
Population of.....	2, 304
Postal Facilities.....	127-8
Post Offices in.....	322-30
Poultry in.....	281
Principal towns of.....	3
Projected Canals in.....	113
Public Schools of.....	44-50
Railroads, Sketches of.....	114-27
Railroads, Stations on.....	316-20, 330
Revenue Collectors in.....	302
Revenue Districts in.....	302
Rivers, List of.....	3
Rivers, Sketches of.....	92-113
Rivers, Landings on.....	310-16
Seal of, Great.....	298
Sea Coast of.....	2
Senators of, State.....	299
Senators of, United States.....	302
Sheep Husbandry in.....	281
Shrubs of.....	228-35
Soils of.....	197-220
Stock Raising in.....	280-1
Tax Laws of.....	27-35
Telegraph Facilities of.....	128
Topography of.....	2
Trade Statistics of.....	282-3
Trees of.....	228-35
Universities in.....	53
University of.....	54-8
Vegetables of.....	281
Water Transportation Lines of.....	89-113
Alabama Central Railroad, Sketch of.....	115-6
Stations on.....	316
Alabama Great Southern Railroad, Sketch of.....	116-7
Stations on.....	316
Alabama River, Sketch of.....	93-5
Landings on.....	310-12
Alienage, Law of.....	40
Altitudes in Alabama.....	306
Appeals, Law of.....	41
Area of Alabama.....	2

Attorney General.....	15, 298
Auditor.....	15, 298
Bailey Springs.....	293
Birmingham, Sketch of.....	84-6
Black Warrior River, Sketch of.....	97-9
Landings on.....	314-5
Bladon Springs.....	294
Blind Institute.....	61-3
Blount Springs.....	293
Books descriptive of Alabama.....	306
Boundaries of Alabama.....	1-2
Business Laws of Alabama.....	36
Cahaba River, Sketch of.....	99-100
Canal, Guntersville and Gadsden.....	113
Canal, Squaw Shoals.....	113
Canal, Tennessee and Tombigbee Rivers.....	113
Chancery Courts.....	17-18
Chancery Districts.....	17, 307 (Note.)
Chancery Divisions.....	17, 307 (Note.)
Chancellors.....	298
Chattahoochee River, Sketch of.....	111-12
Landings on.....	316
Choctawhatchee River.....	112
Chronology, Historical of Alabama.....	4-11
Circuit Courts.....	17
Circuit Clerks.....	21-2
Circuit Judges.....	299
Circuits, Judicial.....	17, 307 (Note.)
Cities of Alabama.....	3
Civil Actions.....	40
Clearances, Mobile.....	283
Climate of Alabama.....	284-93
Coal of Alabama.....	256-9
Coal Mines of Alabama.....	259-62
Coast of Alabama.....	2
Code, Miscellaneous Provisions of.....	35
Coins, Value of.....	307
Collectors, Customs in Alabama.....	302
Collectors, Internal Revenue in Alabama.....	302
Colleges, Alabama.....	53
College, Agricultural and Mechanical.....	58-61
College, Alabama Medical.....	63-5
Conclusion.....	295-7
Congressmen, Alabama.....	302
Congressional Districts.....	25, 307
Constables.....	22
Constitution of Alabama.....	IX-XXXIX
Consuls in Alabama.....	303
Contracts, Immigrants'.....	42
To be in Writing.....	37
Void.....	36
Conveyances, of Homestead.....	42
Law of.....	37-8
Coosa River, Sketch of.....	100-5
Landings on.....	315
Coroner.....	22-3
Corporations.....	42-3
Costs.....	41
Cotton Manufacturing in Alabama.....	268-76
Mills in Alabama.....	277-78
Receipts at Mobile for 61 years.....	282
Counties.....	24, 303

County Courts.....	20
County Commissioners	21
Organization.....	21-4
Seats	21, 303
Superintendent of Education.....	23
Surveyor	23
Treasurer	23
Courts, Chancery.....	17-18
Circuit.....	17
County	20
Commissioners.....	20-1
Justices of the Peace.....	19-20
Probate	18-19
Court, Supreme....	16, 298
Cullman, Sketch of.....	86-88
Debt, of Alabama.....	305
Deaf Institute, Alabama.....	61-3
Declaration of Rights.....	12
Descents, Law of.....	39
Distances, Miscellaneous.....	309
From Mobile	306
From Montgomery	306
Distributions, Law of....	39
Districts, Chancery.....	17, 307 (Note.)
Congressional.....	25, 307
Customs.....	302
Internal Revenue	302
Land	302
Senatorial.....	24, 307 (Note.)
Divisions, Chancery	17, 307 (Note.)
Dower, Law of.....	38-9
Dumb Institute, Alabama.....	61-3
East Alabama and Cincinnati Railroad, Sketch of.....	117
Stations on.....	316
Education, Superintendent of.....	16, 46, 298
County Superintendent of.....	46-7
Election Laws, Alabama.....	25-6
Entrances, Mobile	283
Escambia River	112
Estate, Wife's Separate.....	39-40
Executive Department	14-16, 298
Evidence, Rules of.....	40-1
Exemption, Laws.....	41
How Waived.....	41
Exports, from Mobile.....	282
Express Facilities, Alabama.....	128
Fish, in Alabama	281
Trade, Mobile.....	283
Forests, of Alabama.....	221-35
Foreign Coins, Value of	307
Fruit Growing, in Alabama.....	250
Fund, School.....	48
Game, in Alabama.....	281
General Assembly, Organization of.....	14
Members of.....	299-302
Geology, of Alabama.....	129-196
Governor	15, 298
Government of Alabama	12-21
Executive Department.....	298
Judicial Department	298-9
Legislative Department	299-302
Grain, Weight of.....	308

Grasses, of Alabama.....	236-47
Guntersville and Gadsden Canal	113
Health, of Alabama.....	284-93
Healing Springs.....	294
Histories, of Alabama.....	306
History, Chronological, of Alabama.....	4-11
Homestead, Conveyance of.....	42
Exemption of.....	41
Liens on.....	42
Mortgage of.....	42
Hôpital, Alabama Insane.....	65-8
House of Representatives, Organization of	14
Members of.....	300-2
Huntsville, Sketch of....	82-4
Imports, at Mobile.....	282
Immigrants, Contracts	42
Indians, of Alabama	11
Insane Hospital, Alabama ...	65-8
Internal Revenue Collectors	302
Districts.....	302
Iron, of Alabama.....	262-5
Works, Alabama.....	265-67
Islands, of Alabama.....	2
Jackson Springs.....	293
Judges, Circuit.....	299
Federal.....	302
Supreme Court	298
Judicial Power of Alabama.....	16-21
Department of Alabama.....	298-99
Judge of Probate	21
Justices of the Peace.....	19-20, 21
Land, Districts in Alabama.....	302
Officers in Alabama	302
Redemption of.....	32, 40
Sold for Taxes.....	32
Landings, Alabama River.....	310-12
Chattahoochee River	316
Coosa River.....	315
Little Tombigbee River.....	313-14
Mobile River.....	310
Tennessee River.....	315
Tombigbee River	315
Warrior	314-15
Latitude of Alabama	2
Laws, Alabama Business.....	36
Legislature, Organization of.....	14
Members of.....	299-302
Licenses	32-5
Liens, on Homestead.....	42
Lien Laws	42
Lime, of Alabama	279
Works of Alabama.....	279-80
Little Tombigbee River, Sketch of.....	96
Landings on.....	313-4
Livingston Water.....	293
Longitude, of Alabama.....	2
Manufacturing, Cotton, in Alabama.....	268-76
Measures, Miscellaneous.....	369
Medical College, of Alabama.....	63-5
Memphis and Charleston Railroad, Sketch of.....	117-8
Stations on.....	317
Mines, Alabama Coal.....	259-62

Mills, Alabama Cotton.....	277-8
Mineral Springs, Alabama.....	293-4
Waters, Alabama.....	293-4
Mississippi, Gainesville and Tuscaloosa Railroad, Sketch of.....	118
Stations on.....	317
Mobile, Bay of.....	90-2
Clearances at.....	283
Cotton Receipts at, for 61 years.....	282
Distances from.....	306
Entrances at.....	283
Exports from.....	282
Fish Trade.....	283
Imports.....	282
Oyster Trade.....	283
River, Sketch of.....	92-3
Landings on.....	310
Mobile City, Sketch of.....	73-7
Mobile and Alabama Grand Trunk Railroad, Sketch of.....	118-9
Stations on.....	317
Mobile and Girard Railroad, Sketch of.....	119
Stations on.....	317
Mobile and Montgomery Railroad, Sketch of.....	121-2
Stations on.....	318
Mobile and Ohio Railroad, Sketch of.....	119-21
Stations on.....	317-18
Money, U. S.....	307
Order Offices in Alabama.....	322-30
Montgomery, distances from.....	306
Sketch of.....	77-81
and Eufaula Railroad, Sketch of.....	122
Stations on.....	318
Mortgages, of Homestead.....	42
Mountain ranges in Alabama.....	2
Name, of Alabama.....	1
Names of States and Territories, abbreviations.....	308
Nashville, Chattanooga, and St. Louis Railroad, Sketch of.....	122-3
Stations on.....	318
Nashville and Decatur Railroad, Sketch of.....	123
Stations on.....	318
Newspapers, in Alabama.....	304
New Orleans and Mobile Railroad, Sketch of.....	123
Stations on.....	319
New Orleans and Selma Railroad, Sketch of.....	123-4
Stations on.....	319
Normal Schools, of Alabama.....	50-2
Office, Oath of.....	26
Who may hold.....	26
Officers, Elected in Alabama.....	25
Land in Alabama.....	302
Oyster Trade, Mobile.....	283
Partnerships, Limited.....	42-3
Peace, Justices of the.....	19-20-21
Penitentiary, Alabama.....	68-72
Pensacola Railroad.....	124
Pleadings in Alabama.....	40
Political divisions, of Alabama.....	24
Population, of Alabama.....	2, 304
Postal facilities, Alabama.....	127
Postoffices, in Alabama.....	322-30
Poultry, in Alabama.....	281
Pratt Gin Company.....	280
Principal Towns, of Alabama.....	3

Probate Courts.....	18-19
Probate Judge.....	21
Produce, Weight of.....	308
Public Schools, of Alabama.....	44-50
Railroads, of Alabama.....	114-27
Railroad Stations, in Alabama.....	316-320
Redemption, of Lands.....	32, 40
Registration of Voters.....	26
Representatives, House of.....	14, 300-2
Revenue, School.....	48-9
Rivers, of Alabama.....	3, 92-112
River Landings, in Alabama.....	310-316
Savannah and Memphis Railroad, Sketch of.....	124
Stations on.....	319
School, Fund.....	48
Revenue.....	48-9
Trustees.....	47-8
Schools, Normal, of Alabama.....	50 2
Public, of Alabama.....	44-50
Sea Coast, of Alabama.....	2
Seal, of Alabama.....	298
Secretary of State.....	15, 298
Selma Sketch of.....	81-2
Selma and Gulf Railroad, Sketch of.....	124
Stations on.....	330
Selma, Marion and Memphis Railroad, Sketch of.....	125
Stations on.....	319
Selma, Rome and Dalton Railroad, Sketch of.....	125
Stations on.....	319
Senate, Organization of.....	14
Members of.....	299
Senators, State.....	399
United States.....	302
Senatorial Districts.....	24, 307 (Note.)
Separate Estate, Wife's.....	39-40
Sheep Husbandry, in Alabama.....	281
Shelby Springs.....	293
Sheriff.....	22
Shrubs, in Alabama.....	228-35
Sipsey River.....	112
Soils, of Alabama.....	197-220
South and North Alabama Railroad, Sketch of.....	125-6
Stations on.....	319
Southwestern Railroad.....	126
Spring, Alabama Mineral.....	293-4
Squaw Shoals, Canal.....	113
Stations, Alabama Railroad.....	316-20, 330
Statistics, Alabama Trade.....	282-3
State, Organization of.....	14-21
States, Abbreviations of Names.....	308
Stock Raising, in Alabama.....	280-1
Sulphur Springs.....	293
Supreme Court.....	16, 298
Superintendent of Education.....	16, 46, 298
County.....	23, 46
Surveyor, County.....	23
Tax Assessor.....	23
Collector.....	23
Laws of Alabama.....	27-35
Talladega Springs.....	293
Telegraph Facilities, of Alabama.....	128
Tennessee River, Sketch of.....	105-11

Tennessee River, Landings on	315
Tennessee and Tombigbee Rivers Canal.....	113
Territories, abbreviation names.....	308
Tombigbee River, Sketch of.....	95-96
Landings on.....	313-4
Tombigbee River, Little, Sketch of.....	96
Landings on.....	313-4
Topography, of Alabama.....	2
Towns, Principal of Alabama.....	3
Trade, Statistics.....	282-3
Treasurer, County.....	23
State.....	15-298
Trees, in Alabama.....	228-35
Trustees, School.....	47-8
Tuskegee Railroad.....	126
Universities, of Alabama.....	53
University, of Alabama.....	54-8
U. S. Money.....	307
Senators.....	302
Vegetables, in Alabama.....	281
Vicksburg and Brunswick Railroad, Sketch of.....	126-7
Stations on.....	320
Void, Contracts.....	36
Voters, Registration of.....	26
Vote, who may.....	25
Warrior River, Sketch of.....	97-9
Landings on.....	314-15
Waters, Alabama, Mineral.....	293-4
Weights, of Grain and Produce.....	308
Miscellaneous.....	308
Western Railroad, Sketch of.....	127
Stations on.....	320
Wife's Separate Estate.....	39-40
Wills, Law of.....	39

35



EXPLANATION OF
COLORING



METAMORPHIC

35

BERNEY'S HAND BOOK OF ALABAMA

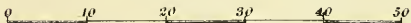
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STATE GEOLOGIST

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SCALE OF MILES.



8



Andrews Bay



- EXPLANATION OF COLORING
- METAMORPHIC
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 - PORT HURON

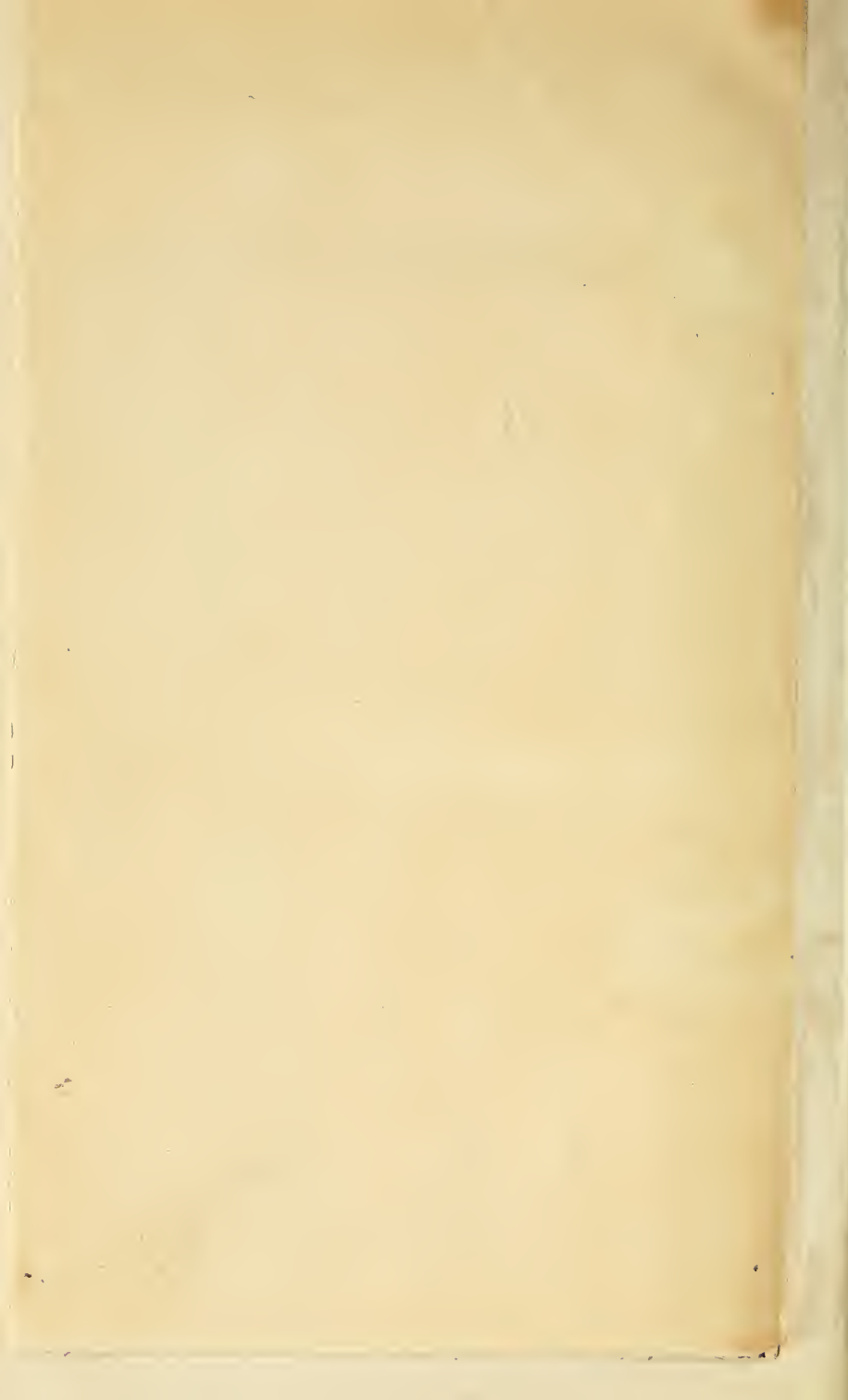
- EXPLANATIONS
- Rail Roads
 - Steamboat Roads
 - Cable
 - State Capital
 - Cities
 - County Towns
 - Unincorporated Towns
 - Iron Mines
 - Gold & Silver Mines
 - Lead Mines

GEOLOGICAL MAP
OF
ALABAMA

PREPARED FOR
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